

STRUCTURAL DIFFERENCES OF THE AGRICULTURAL SECTOR IN THE SOUTH-EASTERN EUROPEAN COUNTRIES

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Abstract

In the present study, the comparative analysis of the state and changes in the sectoral economic structure of the "Agricultural" sector for some countries of South-Eastern Europe is of interest. This research aims to bring to the fore the structural differences in the agricultural sector that distinguish the development of the countries of South-Eastern Europe. By analyzing changes in agriculture using key macroeconomic indicators, the study identifies existing differences in this sector between these countries. On this basis, an assessment is given to what extent these changes are identical to the changes in the member states of the European Union. The results of the research show that the large relative number of those employed in the "Agricultural" sector in some South-Eastern European countries can be seen as an indication of existing opportunities for the restructuring of resources and their reallocation to other sectors of the economy. The change in the relative share of the Gross Added Value in the direction of reduction for the "Agricultural" sector is a process that leads to the improvement of the economic situation of a given country and the effect of this should be reflected in the direction of cohesion between these countries.

Key words: agriculture sector, structural analysis, changes, differences and disproportions

INTRODUCTION

The dynamics of economic processes form a sectoral structure that determines a region's potential to generate and sustain high levels of economic growth. Currently, changes in the contemporary world economy and the enlargement of the European Union with new Member States pose different challenges related to the structural adaptation of countries and their economic development. The countries of South-Eastern Europe differ considerably in their economic structure and development potential, and the growing disparities between them create social and economic problems in the region. Often, a high relative share of the agricultural sector is an indicator of a country's lower economic development potential, as labour productivity in this sector is lower. The reallocation of labour resources from the agricultural sector to other sectors results in an increase in average productivity and hence higher Gross Value Added, which is a prerequisite for the economic growth of the region. Lewis (1954) [10] argues that the transition from agriculture

to industry is the basis of economic development and growth.

He opines that capital and labour move from sectors with lower productivity to those with higher productivity and create the preconditions for economic growth. Roland (2016) [16] defines economic growth of countries mainly by measuring Gross Domestic Product, despite the fact that there are many other factors that can accrue economic growth. Many researchers advocate that structural changes in employment are an essential factor for regional development (Pasinetti, 1981; Herrendorf, Rogerson & Valentinyi, 2013; Naveed & Ahmad, 2016; Jorgenson & Timmer, 2011) [15, 8, 14, 9]. Other authors consider that poor regions are characterized by low incomes, high long-term unemployment, low levels of education of the population, and low levels of investment (Alcidi et. al., 2018; Baldwin & Wyplosz, 2015; Halmai & Vasary, 2010) [1, 3, 7]. McMillan & Rodrik (2011) [13] identify the intensity of structural transformation as a key factor for countries' economic development. Lin (2011, 2020) posits that structural transformations are linked to the transition

from a poor to a rich economy, asserting that the best approach to improve a country's industrial structure is by fostering the growth of its industries.

These transformations are tailored to the level of economic development and comparative advantages determined by the structure of the country concerned. Some authors (Arzeni A., Esposti R. & Sotte F, 2001; Fuller & Beghin, 2007) [2, 6] in their studies conclude that there are significant differences in the development of various countries, including in agriculture, and this calls for a targeted economic policy. Analyzing structural differences requires considering the specific development opportunities available to the agricultural sector. The degree of economic development of the region directly depends on the place and importance of this sector in its economic structure. The study of structural changes in the agricultural sector makes it possible to identify the differences that exist between countries, which allows for an assessment of the extent to which these structural changes are favorable for the development of the economy in the country and the region.

Countries with a higher share of agriculture relative to other sectors are considered to have less developed economies.

In this context, the aim of this paper is to analyze the level, dynamics and structural regional differences in some key economic indicators in the agricultural sector, and on this basis to make comparisons of the ongoing processes in the countries of South-Eastern Europe.

In order to achieve the set objective the following main tasks are specified:

- (i) To assess the degree of homogeneity of the SEE countries in terms of their economic development;
- (ii) Assessment of the level and dynamics of structural changes in the Gross Value Added in the agricultural sector for the region;
- (iii) To estimate the annual average relative share of employees in the sectoral structure of SEE countries;
- (iv) A comparative analysis of changes in the structure employment in the agricultural sector for countries in South-Eastern Europe.

An investigation into what extent the countries follow some common patterns in their development in the region and the EU, with a focus on the specificity of the agricultural sector in the economic structure of the region has been launched.

The object of the study is the regional structural disparities by main economic sectors for the countries of South-Eastern Europe. The subject of the analysis are indicators characterizing the economic structure of the countries of South-Eastern Europe, covering the countries Bulgaria, Greece, Croatia, Romania, Bosnia and Herzegovina, Montenegro, North Macedonia, Albania, Serbia, Turkey and Kosovo. To achieve the goal and objectives, a period from 2016 to 2023 was analyzed when assessing the relative share of Gross Value Added, and for the assessment of employment, the period 2016-2022 was covered.

MATERIALS AND METHODS

The study calculates a coefficient of variation, which is the relative expression of the per capita Gross Domestic Product indicator relative to the average of the same indicator. It looks for the degree of homogeneity among the countries under study, thus assessing the disparities in economic development and well-being of the countries in the region.

The participation of the Gross Value Added and the workforce in the agricultural sector is examined by calculating relative magnitudes of structure, determining the place of this sector in the economy of the countries and the region. The study of the indicators in dynamic aspect has been carried out by absolute growth, growth rate and rate of change, and the sum of squared differences (SSD) is used to further assess the differences in structure between the countries during the observed period. This indicator is calculated by summing the square of the differences between the relative share of the observed indicator and the average of the same indicator over the entire period.

RESULTS AND DISCUSSIONS

The development of agriculture in EU member states is subject to the principles of the

Common Agricultural Policy, within which financial resources are allocated to support reliable agricultural revenues and the sustainability of the agricultural sector. However, some of the countries included in this study are not EU members, namely Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia, Turkey and Kosovo. One of the distinctive features of some South-Eastern European countries is the significant relative share of agriculture in Gross Value Added (including GDP). This high share of the agricultural sector in the economic structure of the national economy is associated with the so-called negative structural adjustment and is indicative of an initial stage of economic development. The analysis of the relationship between structural dynamics and economic development makes it

possible to look for opportunities to reduce undesirable regional disparities.

This study focuses on whether the countries of South-Eastern Europe are homogeneous in terms of their economic development, and to what extent. A leading indicator in international comparisons characterizing the well-being of different countries and the standard of living in a region is the per capita Gross Domestic Product indicator. To assess the degree of unevenness in the economic development of the countries in the region, the coefficient of variation of GDP per capita can be used. This indicator expresses the relative deviation of each country from the average value of GDP per capita for the entire South-Eastern Europe region.

(Table 1).

Table 1. Coefficient of variation of GDP per capita for countries of South-Eastern Europe compared to the average value

Indicators/Year	2016	2017	2018	2019	2020	2021	2022	2023
Coefficient of variation ($V_{\sigma}\%$)	47.2	45.0	43.3	42.0	40.0	39.3	37.7	32.3
Absolute growth (percentage point)	0.0	-2.2	-1.7	-1.3	-2.0	-0.7	-1.6	-5.4
Growth rate (%)	100.0	95.3	96.2	97.0	95.2	98.3	95.9	85.7
Rate of change compared to previous year (%)	0.0	-4.7	-3.8	-3.0	-4.8	-1.8	-4.1	-14.3

Source: Eurostat and own calculations [4].

Dynamically, there is a reduction in the variation around the average GDP per capita, which highlights a favourable trend towards cohesion between the countries in the region. However, despite this reduction, the coefficient of variation has a relatively high magnitude during the period under study. Its high magnitude reflects the degree of heterogeneity in the economic development of the SEE countries studied and provides information on the existence of significant differences between them in terms of the average GDP per capita for the region. During the period under study, Greece has a GDP per capita that is higher than the average for South-Eastern Europe, while Albania and North Macedonia have a significantly lower indicator for the whole period under study. The dynamics of the coefficient of variation shows that the largest decrease took place in 2023 versus the previous

year and this decrease amounted to -14.3%. The observed fluctuations in the growth rate of GDP per capita are the result of the economic development achieved, the instability and disparities in the process of restructuring economies. The restructuring of economies and the increasing disparities in the well-being of the population between the poorest and richest countries in the region hinder intraregional convergence.

Structural changes from the primary to the secondary and tertiary sectors can be traced through a comparative analysis of the changes in the share of Gross Value Added and the workforce in the agricultural sector. On this basis, it is possible to provide an assessment of economic development, as well as to identify directions for favourable structural changes leading to higher labour productivity.

Processes work differently in different countries and regions, but those structural changes that lead to higher efficiency are considered to be beneficial and for this reason they are a driver for economic development. The dynamics of the processes in the economy of the regions predetermine changes in the volume and structure of Gross Value Added by sector, and in parallel with structural changes in Gross Value Added follow changes in the share of employees and hence in relative labour productivity.

The agricultural sector plays an essential role in the economic development of a country, and the intensity of change in the national and regional economic structure shapes trends that affect the territorial balance. Changes in the sectoral structure of the sector determine the place a country occupies in terms of its economic development. Ensuring sustainable rural development, seeking and exploiting regional comparative advantages, and developing a modern agricultural sector are prerequisites for a sustainable dynamic in economic growth rates and for high regional competitiveness. The higher share of the primary sector is an indicator that structural transformation processes are continuing over time and that there are opportunities to realise regional potential.

To determine the participation of the agricultural sector and the degree of economic development achieved, the average relative share of the "Agriculture", "Industry" and "Services" sectors in the formation of the Gross Value Added is established (Table 2).

The relative share of the agricultural sector in the formation of GVA is the lowest for SEE countries. The only exception is Albania, where the agricultural sector has the highest share compared to the other countries. This is followed by the share of the industry sector, with Albania again making an exception with its relative share, and the highest share of the services sector in GVA formation.

On average, over the period, the share of the agricultural sector in GVA varies between 3.6% and 21.5%. For the EU Member States it is 1.7% and for the SEE countries surveyed it averages 7.8%.

Table 2. Relative shares of the "Agriculture," "Industry," and "Services" sectors in Gross Value Added

Country/Region	Share of Gross Value Added in Sector:		
	Agriculture	Industry	Services
EU	1.7	19.7	78.6
South East Europe	7.8	20.2	72.0
Bulgaria	4.2	22.6	73.1
Greece	4.3	15.0	80.7
Croatia	3.6	18.8	77.5
Romania	4.7	23.8	71.5
Bosnia and Herzegovina	6.4	23.3	70.3
Montenegro	8.1	12.0	79.9
North Macedonia	9.2	19.9	70.9
Albania	21.5	13.3	65.3
Serbia	7.4	24.7	67.9
Türkiye	6.9	25.6	67.5
Kosovo	9.1	23.7	67.2

Source: Eurostat and own calculations [4].

Albania has the highest relative share of the indicator in the agricultural sector with 21.5% of the total GVA for the country. For this country, there is a significant deviation both from the share of the other countries and from the average for the European Union and South-Eastern Europe. Compared to the EU average, the relative share of the agricultural sector for Albania is about 13 times higher, and compared to the average for South East Europe it is almost 3 times higher. Albania's economic structure differs significantly from that of the other countries observed and no economic structure can resemble or reach Albania's. In this respect, it is inconceivable to expect a rapid sectoral transformation that would bring Albania closer to the European and South-Eastern European structures. Apart from Albania, North Macedonia, Montenegro and Kosovo also have a higher share than the average of the agricultural sector in South-Eastern Europe, but the difference is not so drastic and such structural changes can be expected in the future, bringing these countries closer to the regional average. The share of the agricultural sector in GVA is lowest for EU member states Croatia, Bulgaria, Greece and Romania, ranging between 3.6-4.7%. Of course, this share is significantly higher than the EU average of 1.7%, but the structural dynamics show a favourable trend of

convergence of the economic structure of these countries with that of the EU. The share of the industry sector varies between 12.0% and 25.6%, with Montenegro having the lowest share, followed by Albania and Greece, and Turkey and Serbia having the highest shares. The tertiary sector for the observation period ranged between 65.3% and 80.7%, with Albania and Greece having the lowest and highest share of services in their national economy. The task of this study is to assess the structure of Gross Value Added in the agricultural sector and the place each country occupies in relation to the average level of the sector in South-Eastern Europe and in the European Union. The comparison of this share with the structure of the same sector in the economy of the countries of South-Eastern Europe makes it possible to identify the differences in a dynamic aspect (Table 3). The comparative analysis of the changes in the structure of the Gross Value Added for the observed SEE countries confirms the assumption that the share of this indicator in

the agricultural sector is higher in the countries with weaker economies.

The downward shift in the relative share of GVA for the agrarian sector is a process that leads to an improvement in economic conditions.

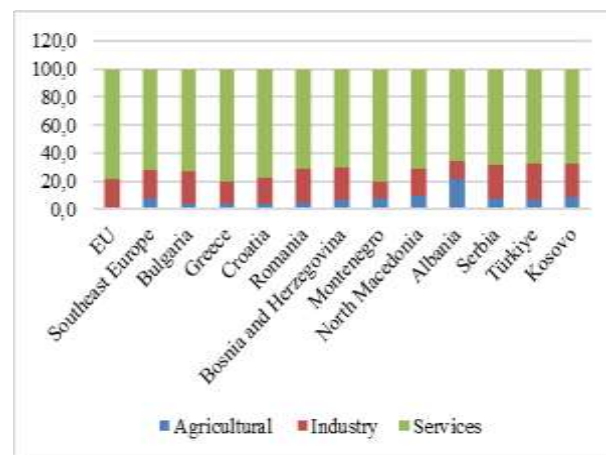


Fig. 1. Share of Gross Added Value in the "Agricultural", "Industry" and "Services" sectors for the period 2016-2023

Source: Eurostat and own illustration [4].

Table 3. Share of the "Agricultural" sector in the Gross Added Value for South-Eastern European countries for the period 2016-2

Country/Region	Share of the " Agricultural " sector in the Gross Added Value								SSD	
	2016	2017	2018	2019	2020	2021	2022	2023	Compar ed to the SSE average	Compared to the EU average
EU	1.6	1.7	1.6	1.6	1.8	1.9	1.8	1.8		
SEE	8.4	7.9	7.7	7.7	8.1	7.7	7.6	7.3		
BG	4.7	4.7	3.9	3.8	4.0	5.5	4.3	3.5	103.0	52.3
EL	4.0	4.4	4.2	4.4	4.7	4.2	4.3	4.3	98.5	53.9
HR	3.7	3.5	3.6	3.5	3.7	4.0	3.7	3.6	137.9	30.1
RO	4.8	4.9	5.0	4.9	4.6	5.3	4.1	4.3	76.4	73.9
BA	7.5	6.5	6.9	6.5	7.0	6.0	5.7	5.2	17.0	180.6
ME	9.0	8.4	8.2	7.9	9.1	8.0	7.5	7.0	2.1	332.9
MK	10.6	9.1	9.8	9.4	9.8	8.3	8.6	8.1	18.5	454.7
AL	22.6	21.8	21.1	21.0	21.9	21.1	21.3	20.9	1494.0	3119.3
RS	8.2	7.2	7.7	7.2	7.6	7.6	7.7	6.3	2.1	263.6
TR	7.0	6.8	6.5	7.1	7.5	6.2	7.2	7.0	7.8	216.6
XK	10.2	9.2	8.1	9.0	8.9	8.6	9.2	9.7	16.6	439.7

Source: Eurostat and own calculations [4].

The effect of such a change should be reflected in a convergence of their economic structure towards the regional and EU average.

The structural dynamics of GVA in the agrarian sector, measured by the year-on-year growth rate, shows a decrease in the average

for South-Eastern Europe over the entire observed period.

A lower relative share is also found for the countries of the region included in the study, with the largest decrease 2023 compared to 2022 for Bosnia and Herzegovina with minus 30.7%, Bulgaria with minus 25.5% and North

Macedonia with minus 23.6%. Changes in the relative share of these countries show that there are structural transformations that are associated with a reallocation of factors of production between different sectors of the economy, which outlines a favourable trend. A further assessment of the changes in the structure of GVA over the whole period relative to the average relative share for SEE and the EU is provided by the sum of squared differences (SSD) indicator. It shows that for the whole period under study, the countries that are close to the SEE average in terms of the share of GVA in the agricultural sector are Montenegro and Serbia, while the structure of the indicator for Albania deviates significantly from that of the region. The comparative analysis in terms of structural changes against the EU average shows the smallest deviations for Croatia, Bulgaria, Greece and Romania, which are EU members. Hence, over the studied period, there is a trend towards convergence of these countries in terms of the structural share of GVA in the agricultural sector and a stabilisation of their structural dynamics through a reduction in the divergence. However, significant deviations can be pointed out again for Albania, followed by North Macedonia and Kosovo, estimated by SSD.

In addition to the participation of the agricultural sector in the GVA of the economy, structural changes in employment are of interest in this study. Those changes that lead to a reduction in employment in labour-intensive sectors while increasing employment in higher productivity sectors are considered to be favourable. For the period, the average relative share of employees in the "Agricultural", "Industry" and "Services" sectors is calculated, as well as the averages for the countries of South-Eastern Europe and the EU. The rate of the employees is used to look for the place of each sector in the economic structure of the country and the deviation that exists with respect to the regional and EU average. The table does not present data for Kosovo due to lack of information (Table 4).

Table 4. Relative share of the employed in the "Agriculture", "Industry" and "Services" sectors

Country/Region	Share of employed in sector:		
	Agriculture	Industry	Services
EU	4.3	15.5	80.2
Southeast Europe	17.3	21.1	61.6
Bulgaria	16.9	19.8	63.3
Greece	10.8	9.2	80.0
Croatia	6.7	20.4	73.0
Romania	22.2	21.2	56.7
Bosnia and Herzegovina	15.9	33.0	51.1
Montenegro	7.6	18.3	74.1
North Macedonia	21.2	19.8	59.0
Albania	36.9	20.3	42.8
Serbia	17.0	22.5	60.5
Türkiye	18.2	26.7	55.2

Source: Eurostat, ILOSTAT and own calculations [5].

Over the entire period under review, the annual average share of employment in the agricultural sector in the EU member states was 4.3%. Concurrently, the observed South-Eastern European (SEE) countries recorded an average employment rate of 17.3% in this sector, which is almost four times higher. A significant difference is observed in the share of employment in the agricultural sector among the studied countries, with values ranging from 6.7% to 36.9%. Albania has the highest share at 36.9%, followed by Romania with 22.2% and North Macedonia with 21.2%. The comparison between the structure of employment in agriculture and the EU average relative share in the same sector shows that Croatia, an EU Member State, is closest to the average, followed by Montenegro, with these countries reporting employment rates of 6.7% and 7.6% respectively. The largest share of workers in the industrial sector is observed in Bosnia and Herzegovina, Turkey, and Serbia, while Greece reports the lowest such share. In Greece, the difference between the share of employees in the industrial sector and the EU average is almost half as large compared to the other countries.

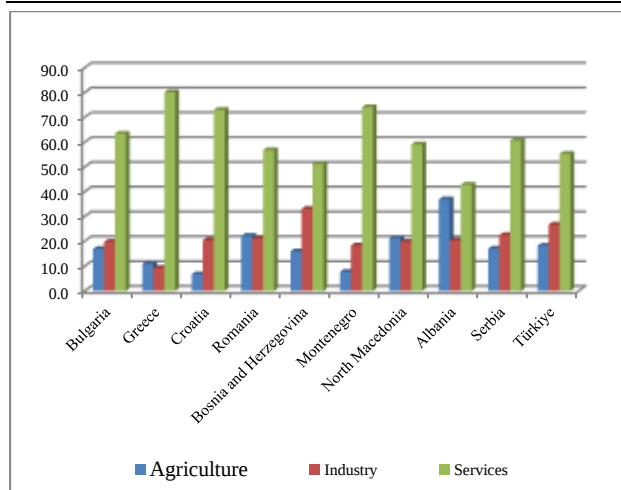


Fig. 2. Share of the employed in the "Agricultural", "Industry" and "Services" sectors for the period 2016-2023.

Source: Eurostat, Ilostat and own illustration [5].

Throughout the entire period under review, Greece has been the leader in both South-Eastern Europe and the European Union regarding employment in the services sector, with the average relative share reaching 80.0%. Albania has the lowest share in the services sector with 42.8% and Bosnia and Herzegovina

with 51.1%. These countries have significantly lower share, compared to South-Eastern Europe and the EU, with Albania having almost twice the difference, compared to EU member states.

The share of employees in the agricultural sector for SEE countries is presented until 2022, except for Kosovo.

A further assessment of changes in the structure of employment over the whole period relative to the average relative share for SEE and the EU is made using the sum of squared differences (SSD) indicator.

The sum of the squared differences between the relative share of employees and the average over the whole period is sought, assuming that the country with the largest sum of the squared differences shows the most significant differences over the entire observed period, compared to the regional and EU average employment (Table 5, Figure 3).

For all the years studied, it is evident that Albania has the highest percentage of employees in the agricultural sector.

Table 5. Relative share of the employed in the "Agricultural" sector for countries from South-Eastern Europe

Country/R egion	2017	2018	2019	2020	2021	2022	2023	SSD compared to the SSE average	SSD compared to the EU average
EU	4.5	4.4	4.3	4.1	4.5	4.4	4.3		
Southeast Europe	18.8	18.7	17.6	17.4	16.7	16.7	16.3		
Bulgaria	18.0	18.9	17.7	16.9	17.3	16.2	15.2	2.7	1156.1
Greece	11.2	11.3	10.9	10.5	10.4	10.7	10.5	314.9	289.4
Croatia	7.7	7.1	6.3	6.2	6.2	6.6	6.7	815.8	39.4
Romania	23.8	23.4	23.3	22.3	21.6	21.4	20.5	167.2	2268.9
Bosnia and Herzegovina	18.0	18.9	13.8	18.0	12.2	13.8	16.9	44.5	982.4
Montenegro	7.7	7.9	8.0	7.2	7.5	7.4	7.2	690.0	72.2
North Macedonia	22.7	21.9	21.9	21.4	21.4	21.0	20.1	114.7	2056.7
Albania	40.0	38.1	37.3	36.4	36.2	35.6	34.9	2658.3	7442.9
Serbia	19.6	19.8	18.1	16.8	16.2	17.0	14.3	6.7	1214.2
Türkiye	19.5	19.4	18.4	18.1	17.8	17.2	16.7	3.7	1339.3

Source: Eurostat, ILOSTAT and own calculations [5].

Dynamically, there is a decreasing trend in the relative share, with a decrease of minus 12.8% in 2022, compared to 2016. The greatest intensity of change in the employment structure is found for Bosnia and Herzegovina.

The growth rate versus the previous period shows an increase in the share of employed persons in 2017, 2021 and 2022 by 5%, 13.1% and 22.5% respectively, while in 2018 and 2020 there is a decrease of 27% and 32.2%

compared to the previous period. In other countries, a decrease in the relative share of employment in the sector is found in most years, although this decrease is not significant.

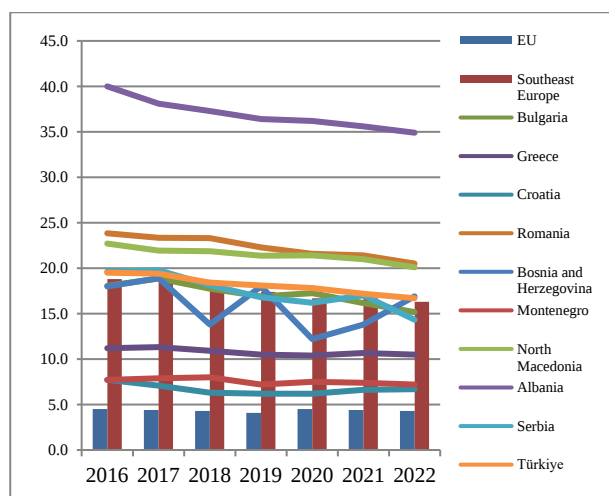


Fig. 3. Share of employed in the "Agricultural" sector of countries from South-Eastern Europe for the period 2016-2023

Source: Eurostat, Ilostat and own illustration [5].

Calculating the sum of squared differences shows that Albania has the highest proportion of agricultural employment in South-Eastern Europe, and Croatia the lowest, with these disparities being significant over the entire period. Albania is the country with the highest relative share of employment in the agricultural sector, while Croatia has the lowest share of employment compared to that of South-Eastern Europe. Bulgaria, Turkey and Serbia are close to the SEE structure, with Bulgaria being an EU member state. The sum of squared differences to the EU average in the agricultural sector shows significant differences again with Albania, which as a share exceeds the EU share by many times, as well as differences with Romania and North Macedonia. Countries that are close to the EU structure of employment in the agricultural sector are Croatia and Montenegro. Overall, the high share of employees in the agricultural sector is indicative of the lower competitiveness and productivity of the economy, and this may be a precondition for adverse development trends in the region and an increase in undesirable regional disparities in the short term.

CONCLUSIONS

The processes of structural transformation in the main sectors of the economy take place differently in different countries, according to specific comparative advantages. In the course of the study, a high degree of inhomogeneity in the economic development of the surveyed SEE countries was found, as well as the presence of significant differences between them in terms of average GDP per capita, Gross Value Added and employment in the agricultural sector. For the observed period, some of the South-Eastern European countries, namely Bulgaria, Croatia, Romania and Greece display a structure that is more similar to that of the European Union. The processes of structural adaptation in Bulgaria and Romania continue, despite the successful restructuring of their economies. The other non-EU countries surveyed show significant differences in terms of the indicators observed in the agricultural sector compared to the same EU indicators.

The structure that differs the most from the magnitudes of South-Eastern Europe and the EU on the selected indicators is that of Albania, Kosovo and North Macedonia. Of these, however, Albania has a structure of GVA and employment in the agricultural sector that differs significantly not only from that of SEE and the EU, but also from any economic structure of the countries in the region.

In view of the application of the countries of South-Eastern Europe to join the European Community, there is a need to assess the economic structures that have been formed at national and regional level, to examine their impact on regional convergence and to look for opportunities to reduce the disparities between the countries in the region.

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