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COMPARATIVE ANALYSIS OF THE SUSTAINABLE DEVELOPMENT INDICATORS OF THE WESTERN BALKAN COUNTRIES AND CERTAIN EU COUNTRIES

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Abstract

This paper aims to examine the sustainable development indicators of five Western Balkan countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia), which strategic objective, during the period 2000-2012, was to become part of the European Union (EU) and six countries (Bulgaria, the Czech Republic, Hungary, Poland, Slovakia and Slovenia), comparable according to certain indicators with the Western Balkan countries, which joined the EU with six other countries in the period from 2000 to 2012. Montenegro, as a WBC (Western Balkan country), is excluded from the analysis due to the lack of statistical data on the key indicators, while Croatia is assigned to the WBCs group since it joined the EU only in 2013. According to the Constitution of the Republic of Serbia, Kosovo is considered an integral part of the territory of the Republic of Serbia. This paper, therefore, covers 11 countries, which were divided into two groups. Sustainable development indicators were studied by taking into consideration the most important issues. The period from 2000 to 2012 was divided into three shorter periods in order to more precisely identify key changes. The period after 2012 is shown informatively and depending on availability of statistical data. Empirical analysis implies assessment of the sustainable development indicators through calculating their Spearman's rank correlation coefficients. The paper consists of three sections. The first section introduces theoretical analysis of the concept and significance of sustainable development. In the second section, the analysis of sustainable development indicators based on the Eurostat methodology is performed; the available indicators for the WBCs were selected and analyzed in accordance with the mentioned methodology. The third section deals with the empirical analysis of the level of correlation between the WBCs sustainable development indicators and those of the EU Member States in relation to the EU average.

Key words: sustainable development indicators, Western Balkan countries (WBCs), European Union (EU).

УПОРЕДНА АНАЛИЗА ПОКАЗАТЕЉА ОДРЖИВОГ РАЗВОЈА ЗЕМАЉА ЗАПАДНОГ БАЛКАНА И ПОЈЕДИНИХ ЗЕМАЉА ЕВРОПСКЕ УНИЈЕ

Abstract

Циљ овог рада је утврђивање сагласности између показатеља одрживог развоја у периоду 2000–2012. године, и то пет земаља Западног Балкана (Албанија, Босна и Херцеговина, Хрватска, Македонија и Србија), чији је стратешки циљ у посматраном периоду био да постану чланице Европске уније (ЕУ), и шест земаља (Бугарска, Чешка, Мађарска, Пољска, Словачка и Словенија), које су са још шест држава у посматраном периоду постале чланице ЕУ, а које су према одређеним показатељима упоредиве са земљама Западног Балкана. Црна Гора је, као ЗЗБ (земља Западног Балкана), изузета из анализе, услед недоступности статистичких података за већину посматраних показатеља, док је Хрватска анализирана као ЗЗБ пошто је тек 2013. године постала чланица ЕУ. Према Уставу Републике Србије, Косово се сматра саставним делом територије Републике Србије. У овом раду је, дакле, обухваћено 11 земаља, подељених у две групе. Посматрани су показатељи одрживог развоја, кроз најзначајније теме. Временски оквир од 2000. године до 2012. године подељен је у три периода како би се уочиле кључне промене. Период након 2012. године приказан је информативно и у зависности од расположивости статистичких података. Емпиријска анализа обухвата утврђивање Спирмановог коефицијента корелације ранга показатеља одрживог развоја. Рад се састоји из три конзистентне целине. Прва се односи на теоријску анализу појма и значаја одрживог развоја. Друга обухвата анализу показатеља одрживог развоја према методологији Eurostat-a, као и дефинисање индикатора доступних за анализу ЗЗБ, прилагођених наведеној методологији. Трећи део рада обухвата емпиријску анализу нивоа корелације показатеља одрживог развоја ЗЗБ и наведених чланица ЕУ у односу на просек ЕУ.

Кључне речи: показатељи одрживог развоја, земље Западног Балкана (ЗЗБ), Европска унија (ЕУ).

INTRODUCTION AND LITERATURE REVIEW

Sustainable development has a wide application, therefore, it is interpreted in different ways (Hopwood, Mellor & O'Brien, 2005). This term has been used more frequently in scientific, professional and political circles, especially since the publication of the Brundtland Report, by the World Commission on Environment and Development (WCED), which dealt with the issues of global environment and development (Redclift, 2005). The significance of this concept is supported by the fact that a large number of European and US companies consider sustainable development the key to success (Giddings, Hopwood & O'Brien, 2002).

The aim of sustainable development is to balance the three key factors, i.e., the three pillars of sustainable development: economic growth; economic and technological development; development of society based on social equality and environmental protection including responsible use of

natural resources and consolidation of their management, supported by the appropriate institutional framework (Nadić, 2012). A life of dignity for all, that reconciles economic prosperity, efficiency, peaceful societies, social inclusion, environmental responsibility and responsible use of resources is the base for sustainable development (European Commission, 2016).

Modern approach to measuring sustainable development is based on using complex sets of indicators, selected not only based on economic dimension, but also on numerous conceptual and thematic categorizations (Stiglitz, Sen & Fitoussi, 2009). Determination of qualitative and quantitative indicators is the crucial prerequisite for achieving sustainable development (Veljković, 2006).

One of the main economic indicators of the overall development is the annual GDP p/c growth. GDP (Gross Domestic Product) is the indicator used to measure economic growth and sustainable development (Gaspar, Marques & Fuinhas, 2017); however, due to the lack of flexibility in detecting welfare enhancing and welfare degrading expenditures (Talberth, Cobb & Slattery, 2007) this indicator is supplemented by the Genuine Progress Indicator (GPI). GPI aims to find out whether economic growth actually leads to an increase in the welfare of society, i.e., if it measures sustainable development, rather than particular economic activities (Bossel, 1999). Although widely accepted in theory, this indicator has not seen such wide application in practice (Steurer & Hametner, 2013); instead, the emphasis is placed on the sustainable development strategies which include a set of indicators to measure economic, social and environmental development (Eurostat, 2007; Steurer & Martinuzzi, 2005; Dalal-Clayton & Krikhaar, 2007). In addition to the GDP p/c, European countries also use other sustainable development indicators, which are grouped into 11 key indicators (Eurostat, 2016). Which of the mentioned indicators will be given priority, depends on the economic and social policy of a country (Vos, 2005).

In terms of both the EU member countries and the EU candidate countries, there is no unique model of socio-economic development (Steurer & Hametner, 2013) and, therefore, there is no unique set of indicators. Accordingly, only those EU countries that can be compared with the WBCs, based on the development of their sustainable development indicators, were considered in this study. Due to the volume of data and complexity of the analysis that they require, our research did not include all countries that became EU members in the period 2000-2012 (i.e. 12 countries); we rather chose 6 countries that are most suitable for comparison and producing coherent findings relevant to the research presented in this paper. The level of sustainable development of the selected EU member countries analyzed in this paper, which joined the EU between 2000 and 2012 (Bulgaria, the Czech Republic, Hungary, Poland, Slovakia and Slovenia) and the WBCs (Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia) that shared a common strategic goal to join the EU, and whose data are available in

accordance with the Constitution of the Republic of Serbia, is measured based on the indicators compatible with the Eurostat methodology. Montenegro, which is one of the WBCs, is excluded from the analysis due to the unavailability of statistical data for most of the observed indicators, while Croatia is assigned to the WBCs group, since this country joined the EU in 2013. In accordance with the Constitution of the Republic of Serbia ("Official Gazette" of the RS, No. 98/2006), Kosovo is an integral part of the territory of the Republic of Serbia, and, therefore, this paper does not analyze Kosovo as a separate entity, though, according to the EU's definition, the WBCs involved in the EU integration process are: Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia (European Commission, 2017). Croatia was also considered a WBC prior to its EU accession in 2013 (European Parliament, 2017).

This paper aims to determine, by means of correlation analysis, the extent to which the selected sustainable development indicators are in line with the Eurostat methodology, i.e., the extent to which the WBCs are correlated with the EU. This analysis aims to demonstrate whether there is a significant difference in the sustainable development of the EU member states in relation to the countries that strive to join the EU.

This paper builds on the following hypotheses:

1. The null hypothesis: Sustainable development indicators of the WBCs and the selected group of the EU countries show a high level of correlation.
2. The alternative hypothesis: Sustainable development indicators of the WBCs and the selected group of the EU countries show medium and low level of correlation.

MEASURING SUSTAINABLE DEVELOPMENT

The world we live in is a complex and relatively adaptive system, whose subsystems are functioning by affecting one another. What is particularly important is their interdependence, similar to the most common need of every individual to be a part of the family, organization, corporation, nation and culture (Bossel, 1999). In this context, sustainable development is understood as linking of different strongly interacting subsystems into one complex system. Therefore, it is important to identify the key relationships between these subsystems. In this process, the systemic and critical thinking is required, based on which, by rejection of the less important and selection of the most important variables, an appropriate development model can be chosen, either in the form of descriptive, mathematical or programming model. The main purpose of such model is to identify indicators that provide key information on the observed system. According to Bossel (1999), two types of indicators can be distinguished: (1) indicators which are related to the viability of the

system; and (2) indicators related to the system's contribution to the development of other systems with which it interacts. The main objective is, of course, to collect crucial information on the current state of the system and its effect on other systems. Therefore, in order to get a comprehensive picture of the situation, it is necessary to identify relevant indicators based on the observed system, as well as the needs, interests and goals of other systems that depend on it.

A complex system cannot be analyzed based on the changes in a single indicator. Many authors (Boss, 1999; Talberth et al., 2007) agree that GDP p/c alone is not sufficient for the evaluation of sustainable development of a country, since it seriously ignores the social aspect, thus, this indicator can hardly be solely used for the precise assessment of the national well-being (Cobb, Halstead & Rowe, 1995). In order to define sets of indicators that would provide an overall framework for the analysis of sustainable development, the following social subsystems can be distinguished (Bossel, 1998):

1. Individual development – civil liberties, human rights, healthcare, right to work, social integration and participation, gender equality, standard of living, family planning;
2. Social system – population development, ethnic composition, social groups and organizations, medical care, social security;
3. Government – government and administration, public finances, taxes, political participation, immigration policy, legal system, crime control, technology policy;
4. Infrastructure – transportation infrastructure, supply system – water, energy, food, goods and services, waste disposal, communication and media, facilities for science, research and development;
5. Economic system – production, consumption, control of inflation, commerce, labor market, employment, financial market development and etc.;
6. Resources and environment – atmosphere, hydrosphere, natural resources, renewable energy resources, ecosystems, plant and animal species, pollution.

The main objective of defining subsystems is finding adequate indicators relevant to each of these subsystems. In this way, information about each subsystem creates a more realistic picture of the total system. According to the methodology applied by the EU and developed by the Eurostat, each system is divided into subsystems described by a large number of indicators and sub-indicators.

EUROSTAT SUSTAINABLE DEVELOPMENT INDICATORS

Sustainable development indicators, grouped according to the Eurostat methodology, are intended to provide a realistic picture of sustainable development in the EU. Their purpose is to warn about possible problems, i.e., prevent their deepening by taking relevant measures. It is important that the indicators are easy to understand, accurate and based on reliable data (Veljković, 2011.)

The most common problem related to determination and analysis of sustainable development indicators is the unavailability of statistical data required for calculating relevant indicators; in addition, there is also the issue of available data which are often not suitable enough for measuring sustainability. Therefore, the researchers seek to adapt their studies to the methodology and the strategy established in the EU.

Setting goals and measuring their achievement by using relevant indicators is an important characteristic of modern strategic management, and hence, sustainable development strategy (McAlpine & Birnie, 2006).

The most important - headline themes and sustainable development indicators used and measured in the EU countries that provide a comprehensive framework of the countries' development, are as follows (Eurostat, 2016):

- Socio-economic development – the percent of GDP spent for the public and private sector needs, innovation, competitiveness, efficiency, productivity and employment growth;
- Sustainable consumption and production – resources utilization, waste management issues, electric power production and consumption, % of area under organic farming;
- Social inclusion – living conditions (persons at risk of poverty and etc.), access to labor market, education (tertiary education, Internet literacy, Internet users, lifelong learning);
- Sustainable transport – the transport and mobility share of all types of transport, environmental impact of transport (GHG emissions);
- Demographic changes – the employment rate of older workers, their income and etc.;
- Public health - healthcare, death rate due to chronic diseases, the impact of toxic substances on human health;
- Climate change and energy – GHG emissions, share of renewable energy sources;
- Natural resources - biodiversity, clean water springs and marine ecosystems;
- Global partnership – trade globalization, import of goods and services from developing countries, funding of sustainable development, natural resource management;
- Good governance – efficient judiciary, voter turnout in parliamentary elections and citizens' confidence in EU institutions.

For the purposes of carrying out a comparative analysis and using correlation, it is necessary to select those indicators that are available for all the countries that are analyzed in the defined period of time. In this respect, and for the purposes of this paper, the following adapted indicators were used, in accordance with the headline themes:

- Socio-economic development was measured by annual GDP p/c growth;
- Social inclusion and poverty were measured by sub-indicators related to education - Internet users and investments in R&D;
- Demographic changes were measured by life expectancy, while public health was measured by life expectancy and health care expenditure as the percent of GDP;
- Climate change and resource productivity were measured by analysis of CO_2 emissions;
- Global partnership was analyzed based on trade globalization, i.e., EU imports of goods and services from developing countries and the indicators relating to EU financing for developing countries. Correlation analysis was based on the EU average.
- Good governance as a theme, as well as its relevant indicators, has been methodologically developed only recently, thus, it was not possible to conduct accurate analysis concerning the mentioned theme and its indicators in this paper.

EMPIRICAL ANALYSIS

Research Methodology

Research method and sample – The authors conducted an empirical analysis to determine the level of correlation that exists between the WBCs' sustainable development indicators and those of the selected EU countries in the period 2000-2012. Pearson correlation coefficient (R_s) was used to determine the strength of association between the WBCs and the selected EU countries. Spearman's rank correlation coefficient was used to identify the degree of similarity between the indicators related to all observed countries and the EU average in three different periods of time. Primary data collection included downloading relevant data from the World Bank DataBank and the Eurostat database. Given that the WBCs (Croatia excluded) have not yet become members of the EU, the Eurostat does not have official statistical data on sustainable development indicators of these countries, therefore, the data published by the World Bank for the observed period of time were adapted and used. For the purposes of this research, the following indicators were selected: GDP p/c; Internet users; investment in R&D; life expectancy; health care expenditure as percent of GDP; CO2 emissions; EU imports of goods and services from developing countries; EU financing for developing countries.

Statistical method - All collected data are stored in Microsoft Excel 2007 and SPSS (Statistical Package for the Social Science for Windows, version 19) database. The correlation analysis was used for the purpose of this research. The collected data were statistically analyzed using the program Statistical Package for the Social Science for Windows, version 19.0 - SPSS (Pallant, 2010; Jovetić, 2012). Statistical significance was determined at the $\alpha = 0.05$ level of confidence.

Analysis of the Socio-economic Development Indicators - GDP p/c

According to Cohen (1988) and Pallant (2011), the scales of magnitude of the effect sizes are as follows: small r = 0.1 - 0.29; medium r = 0.30 - 0.49; and large r = 0.50 - 1.0. In the context of empirical research presented in this paper, the hypothesis on the strength of association between the GDP p/c of the observed EU countries and the GDP p/c of the WBCs was tested by applying correlation analysis. The linear correlation coefficients show that there is a high degree of correlation between GDP p/c of EU countries and GDP p/c of the WBCs ($R_S > 0.55$ $p<0.05$), except in case of Albania and Macedonia. Between GDP p/c of Albania and Macedonia, compared to Hungary, there is a low degree of correlation judging by the Pearson correlation coefficient $Rs_M = 0.230$ and $p = 0.450$ ($p>\alpha$), i.e., $Rs_A = 0.359$ and $p = 0.229$. The hypothesis on the degree of similarity between GDP p/c of the WBCs and GDP p/c of the selected EU countries compared to the EU average was tested for the different periods of time.

Table 1. Correlation coefficient between the GDP p/c of the WBCs *and the GDP p/c of the selected EU countries compared to the EU average*

Indicator: GDP p/c	2000-2003	2004-2007	2007-2012	After 2012
	WBCs (2000-2012)			(2012-2015)
Albania	0.071	0.091	0.053	0.085
Bosnia and Herzegovina	0.406	0.393	0.276	0.305
Croatia	0.600	0.903	0.772	0.748
Macedonia	0.334	0.730	0.664	0.672
Serbia	0.740	0.469	0.741	0.721
Countries that joined the EU between 2000 and 2012 (6 out of 12 countries)				(2012-2015)
Bulgaria	0.314	0.456	0.697	0.674
Czech Republic	0.765	0.758	0.931	0.914
Hungary	0.052	0.483	0.973	0.874
Poland	0.679	0.932	0.603	0.624
Slovakia	0.994	0.704	0.890	0.855
Slovenia	0.561	0.911	0.866	0.914

Source: The authors, based on data published by the World Bank, 2017

Based on the data shown in Table 1, it can be concluded that the EU countries show the highest level of correlation in the period of crisis, which is an indication that in the EU, both positive and negative effects affect all member countries, regardless of their level of development. In terms of the WBCs, Albania shows the lowest degree of correlation, i.e., the level of correlation is low for all observed periods. Serbia and Croatia, however, show a high level of correlation in all observed periods. Croatia met the largest number of the EU commitments during the last observed period, which resulted in Croatia's accession to the EU in 2013.

Analysis of the climate change and resource productivity indicators

In order to draw conclusions on one of the most important themes in terms of sustainable development, this being the climate change, it is important to test the hypothesis on association between the CO_2 emissions emitted by the selected EU member states and those emitted by the WBCs. We chose this indicator because in terms of the global GHG emissions, CO_2 has the largest share among other GHGs.

The linear correlation coefficients show that, concerning the observed countries, CO_2 emissions show very weak correlation ($R_S < 0.50$; $p > 0.05$). This is the case even with Croatia, although this country became the member of the EU in 2013, which points to the growing need for investments in technology that will reduce GHG emissions.

The hypothesis on the degree of similarity between CO_2 emissions of the selected EU countries and CO_2 emissions of the WBCs compared to the EU average was tested for three different periods.

Table 2. Rank coefficients related to CO_2 emissions emitted by the observed countries compared to the EU average (between 2000 and 2012)

Indicator: CO_2 emissions	2000-2003	2004-2007	2007-2012
WBCs (2000-2012)			
Albania	0.258	0.225	0.335
Bosnia and Herzegovina	0.194	0.254	0.451
Croatia	0.325	0.410	0.445
Macedonia	0.052	0.010	0.302
Serbia	0.258	0.345	0.368
Countries that joined the EU between 2000 and 2012 (6 out of 12 countries)			
Bulgaria	0.310	0.458	0.356
Czech Republic	0.265	0.478	0.305
Hungary	0.152	0.483	0.373
Poland	0.569	0.877	0.621
Slovakia	0.186	0.634	0.365
Slovenia	0.688	0.827	0.610

Source: The authors, based on data published by the World Bank, 2017

Based on the data presented in Table 2, the highest level of correlation between EU member states in relation to the EU average is in the period after their accession to the EU. The coefficients show medium and high level of correlation. In terms of the WBCs, except from Croatia, which joined the EU in 2013, it is evident that in the observed period, all other WBCs show usually low or medium correlation with respect to the EU average.

Analysis of the indicators relating to poverty and social inclusion

This theme is particularly important for the WBCs, given that in the last decade these countries suffered the most from poverty and unemployment. A large number of indicators is associated with this theme, however, they were not all included in the analysis, given that, for the observed period, the complete set of data for the WBCs was not available. Therefore, the following indicators were analyzed: Internet users; investments in R&D.

The hypothesis on the strength of association between the number of Internet users in the EU and the WBCs was tested by using correlation analysis. The linear correlation coefficients showed that there is a medium correlation between the Internet users in the EU and those in the WBCs ($030 < R_S < 0.49$; $p > 0.05$).

The hypothesis on the strength of association between the number of Internet users in the WBCs and those in the selected EU countries compared to the EU average was also tested for different periods of time. Rank coefficients are shown in Table 3.

Table 3. Rank coefficients related to Internet users compared to the EU average

Indicator: Internet users	2000-2003	2004-2007	2007-2012	After 2012
WBCs (2000-2012)				(2012-2015)
Albania	0.531	0.384	0.655	0.748
Bosnia and Herzegovina	0.213	0.341	0.788	0.824
Croatia	0.300	0.531	0.703	0.774
Macedonia	0.186	0.484	0.579	0.605
Serbia	0.213	0.413	0.603	0.847
Countries that joined the EU between 2000 and 2012 (6 out of 12 countries)				(2012-2015)
Bulgaria	0.543	0.431	0.746	0.755
Czech Republic	0.079	0.181	0.676	0.654
Hungary	0.195	0.114	0.506	0.731
Poland	0.422	0.608	0.906	0.912
Slovakia	0.007	0.224	0.480	0.658
Slovenia	0.377	0.460	0.829	0.905

Source: The authors, based on data published by the World Bank, 2017

Based on the rank correlation coefficients, it can be concluded that there is a significantly weak correlation between the observed countries and the EU average in the period 2000-2003. The reason behind this low degree of similarity can by no means be attributed to the low growth rate in the number of Internet users, since, in this period, in the observed countries, the number of Internet users was almost tripled compared to the EU average, which indicates that the reasons behind the low degree of similarity are much more complex.

One of the main indicators of a country's commitment to technological development is the amount of funds invested in R&D as the basis of technological change (Kojić, Levi-Jakšić, Marinković and Petković, 2011). It is believed that the WBCs, especially Serbia and Croatia, understand the importance of innovation and protection of royalties and other related rights. The correlation coefficient ($R_S > 0.65$; $p > 0.05$) confirms the high level of correlation between the funds earmarked for R&D in Serbia and Croatia with those of Bulgaria and Hungary. While rank coefficients in Table 4 concerning the observed period of time and compared to the EU average are given for all selected EU countries, this is not the case with the WBCs, since the relevant data were not available for all WBCs. Therefore, only those WBCs for which data were available are included in Table 4.

Table 4. Rank coefficients related to R&D compared to the EU average

Indicator: R&D	2000-2003	2004-2007	2007-2012	After 2012
	WBCs (2000-2012)			(2012-2015)
Croatia	0.558	0.513	0.420	0.587
Macedonia	0.179	0.684	0.143	/
Serbia	0.431	0.513	0.537	0.508
Countries that joined the EU between 2000 and 2012 (6 out of 12 countries)				(2012-2015)
Bulgaria	0.122	0.611	0.499	0.521
Czech Republic	0.862	0.982	0.788	0.735
Hungary	0.455	0.480	0.520	0.514
Poland	0.154	0.818	0.783	0.674
Slovakia	0.274	0.973	0.640	0.635
Slovenia	0.609	0.559	0.778	0.897

Source: The authors, based on data published by the World Bank, 2017

A strong correlation with the EU in the period 2004-2007 is characteristic for all countries analyzed in this research. The mentioned period is also referred to as the period of prosperity. However, the outbreak of the global economic crisis brought about numerous cuts relating to R&D funding in the WBCs, as well as in many new EU member countries.

Analysis of Indicators Relating to Demographic Changes

The demographic changes are measured by specific indicators: the total number of births per 1,000 persons in one year; life expectancy measured per year and etc. Public health is also measured by health care expenditure as percent of GDP.

Testing of the hypothesis on the strength of association referring to the life expectancy – this indicator is particularly important for measuring the median age of population of a country. Measured in the long-term period, this indicator points to the rate of population aging and warns about demographic changes (improvement or worsening of the situation). The WBCs and the selected EU countries show the highest similarity concerning the mentioned indicator $R_S > 0.900$ and $p = 0$. Table 5 shows original values of this indicator in 4 different periods of time.

Table 5. Life expectancy at birth

Indicator: Life expectancy	2000-2003	2004-2007	2007-2012	After 2012
WBCs (2000-2012)				(2012-2015)
Albania	74.27	75.84	76.80	76.90
Bosnia and Herzegovina	74.67	75.04	75.81	75.80
Croatia	74.51	75.24	75.91	76.02
Macedonia	73.46	74.21	75.03	75.15
Serbia	72.14	72.63	74.59	74.55
EU average and countries that joined the EU between 2000 and 2012 (6 out of 12 countries)				(2012-2015)
EU (average)	77.16	78.19	79.21	79.32
Bulgaria	71.77	72.56	72.96	72.85
Czech Republic	74.97	76.52	77.42	77.45
Hungary	72.25	72.65	74.21	74.25
Poland	74.50	75.24	76.25	76.84
Slovakia	73.60	74.21	75.96	76.20
Slovenia	75.76	77.207	78.76	78.95

Source: The authors, based on data published by the World Bank, 2017

Based on Table 5, the shortest life expectancy, with reference to the analyzed countries, is that of Bulgarians, followed by Hungarians and Serbs. Slovenians and Czech have the longest life expectancy; however, their life expectancy is still below the EU average.

The hypothesis on the strength of association concerning the amount of health care expenditure in the WBCs and the selected EU countries compared to the EU average was tested.

Table 6. Rank coefficients related to health care expenditure compared to the EU average

Indicator: Health care expenditure	2000-2003	2004-2007	2007-2012	After 2012
WBCs (2000-2012)				(2012-2015)
Albania	0.076	0.633	0.482	0.524
Bosnia and Herzegovina	0.782	0.418	0.891	0.748
Croatia	0.873	0.689	0.376	0.458
Macedonia	0.767	0.622	0.382	0.455
Serbia	0.889	0.403	0.524	0.564
Countries that joined the EU between 2000 and 2012 (6 out of 12 countries)				(2012-2015)
Bulgaria	0.784	0.218	0.687	0.685
Czech Republic	0.992	0.387	0.929	0.934
Hungary	0.949	0.692	0.716	0.895
Poland	0.865	0.461	0.496	0.506
Slovakia	0.967	0.591	0.644	0.756
Slovenia	0.819	0.480	0.963	0.854

Source: The authors, based on data provided by the World Bank, 2017

There is a certain similarity in the amount of average health care expenditure as percent of GDP and health care funding between Serbia and some EU countries. However, there is a large disparity concerning the purchasing power for health care services (Gajić-Stevanović, 2012) and other similar indicators.

Analysis of Global Partnership Indicators

For the purposes of this research, two indicators were used to analyze global partnership; these are: trade globalization, i.e., EU imports of goods and services from developing countries and the indicator relating to EU financing for developing countries. Since the WBCs are considered developing countries, the analysis focuses on the correlation between the selected EU member states and the EU average. Table 7 shows the degree of similarity between the observed six new EU member states and the EU average in terms of the value of imports from developing countries.

Table 7. Pearson correlation coefficient

Correlations							
		Bulgaria	Czech Republic	Hungary	Poland	Slovakia	Slovenia
EU	Pearson Correlation	.891**	.885**	.641*	.966**	.926**	.968**
	Sig. (2-tailed)	.000	.000	.018	.000	.000	.000
	N	13	13	13	13	13	13

Source: The authors, based on data published by the World Bank, 2017

Based on the conducted analysis, a strong correlation was determined in terms of the mentioned indicator. Although the value of imported goods from developing countries to Bulgaria, the Czech Republic, Hungary, Poland, Slovakia and Slovenia is significantly lower than the EU average, the growth of this indicator is evident in the twelve-year period. The same goes for the EU financing for developing countries; however, the values of this indicator showed a decline during the period of the global economic crisis. Namely, the financing for the developed countries decreased in 2009, which is the year when a large number of negative effects of the crisis manifested. Development funding by the EU-15, for example, in 2013, accounted for only 77.9% of what it had been in 2007 - the year before the emergence of the global financial crisis. While the official development assistance (ODA) remained relatively stable, the negative impact on the development aid was due to private sector finance to developing countries, which decreased by 41.9% in the period 2007-2013. Although between 2009 and 2011, the amount of private sector financing for development was growing, it again decreased between 2011 and 2013. These fluctuations have highlighted the unpredictability of the financial environment for developing countries, especially those countries that heavily rely on external financial support (Massa, Keane & Kennan, 2012).

CONCLUSION

The comparative analysis of sustainable development indicators of the WBCs and the selected EU countries, showed a rough sketch of sustainable development concept implementation in the observed countries. Based on the empirical analysis, the following issues were identified: insufficient theoretical and empirical data necessary for the analysis of the headline themes of sustainable development, such as demographic change and poverty and social inclusion; insufficient development of sustainable development indicators relating to the WBCs compared to the methodology applied by the EU; lack of relevant statistical data and/or its irregular updating and etc.

Based on the analysis of the headline themes and sustainable development indicators, it is evident that there is a certain degree of similarity between the compared countries. By applying the correlation analysis, the authors identified a strong correlation with respect to some indicators, mainly in the case of Croatia and Serbia, while other countries, depending on the relevant indicators, usually show a medium level of correlation. Therefore, the null hypothesis is partially accepted. Anyway, Serbia shows a significant lag in relation to the EU, particularly considering the following two sustainable development indicators: the share of women in the total number of unemployed and CO_2 emissions. Compared to the EU, Serbia has recorded a slower decrease in the unemployment rate of women. CO_2 emissions and investment in purification by filtration, i.e.

installation of modern filters, especially in the manufacturing industry, are increasing. Based on the empirical analysis, striking dissimilarities are identified compared to the EU average.

The lack, i.e., unavailability of complete statistical data on the most important sustainable development indicators selected in accordance with the Eurostat methodology, is one of the major limitations of this study.

Based on the results of this research, the following recommendations may be of value for the policy-makers and creators of new sustainable development strategies in the Western Balkan countries. The more efficient interaction with the national statistics and the development of a more sophisticated and regularly updated sustainable development database is required. In this respect, it is important to develop sustainable development indicators in line with the EU, i.e., the Eurostat methodology. Raising awareness of the general public, as well as the businesses, on the importance of environmental protection is an imperative, including the continuing education on the significance of all sustainable development themes. It is only by the persistent monitoring of indicators in this field at all levels (from local to global), that more realistic overview of the state of economy and society can be provided, which is also the important basis for future sustainable development.

REFERENCES

Bossel, H. (1998). *Earth at a crossroads: Paths to a sustainable future.* Cambridge: Cambridge University Press.

Bossel, H. (1999). *Indicators for Sustainable Development: Theory, Method, Applications*. Canada: IISD.

Cobb, C., Halstead, T., & Rowe, J. (1995). If the GDP is up, why is America down? *Atlantic Monthly, 10*, 59-78.

Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Dalal-Clayton, B, & Krikhaar, F. (2007). *A New Sustainable Development Strategy: An Opportunity Not To Be Missed*. Den Haag, Netherlands: RMNO.

European Commission. *Next steps for a sustainable European future.* (2016). Retrieved from https://ec.europa.eu/europeaid/sites/devco/files/communication-next-steps-sustainable-europe-20161122_en.pdf

European Commission. *Countries and regions - Western Balkans.* (2017). Retrieved from http://ec.europa.eu/trade/policy/countries-and-regions/regions/western-balkans/#footnote-1

European Parliament. *The Western Balkans.* (2017). Retrieved from http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_6.5.2.html

Eurostat. *Analysis of National Sets of Indicators Used in the National Reform Programmes and Sustainable Development Strategies*. (2007). Retrieved from http://www.uni-mannheim.de/edz/pdf/eurostat/07/KS-RA-07-028-EN.pdf

Eurostat. *Indicators.* (2016). Retrieved from http://ec.europa.eu/eurostat/web/sdi/indicators

Gajić-Stevanović, M. (2012). *Svrsishodnost i potreba razvoja sistema NZR – Analiza kretanja rashoda za zdravstvenu zaštitu* [Purpose and need for the development of

NHA system - Analysis of health care expenditure movement]. Subotica: IZJZS „Dr Milan Jovanović Batut".

Gaspar J. S., Marques A. C., & Fuinhas, J. A. (2017). The traditional energy-growth nexus: A comparison between sustainable development and economic growth approaches. *Ecological Indicators, 75*, 286-296.

Giddings, B., Hopwood, B., & O'Brien, G. (2002). Environment, economy and society: fitting them together into Sustainable Development. *Sustainable Development, 10,* 187–196.

Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development, 13*, 38–52.

Jovetić, S. (2012). Methodology of supervising and improving maintenance process performances. *Economic Themes, 3*, 375-396.

Kojić, J., Levi-Jakšić, M., Marinković, S., i Petković, J. (2011). Istraživanje i razvoj kao indikator performansi tehnološkog razvoja [Research and Development as an Indicator of Technological Development]. *U: Operacioni menadžment u funkciji održivog ekonomskog rasta i razvoja Srbije 2011–2020* (59–66). Beograd: FON.

Massa, I., Keane, J., & Kennan, J. (2012). *The euro zone crises and developing countries*. UK: Overseas Development Institute (ODI).

McAlpine, P., & Birnie, A. (2006). Establishing sustainability indicators as an evolving process: experience from the island of Guernsey. *Sustainable Development, 14(2),* 81–92.

Nadić, D. (2012). Komparativna analiza nacionalnih strategija održivog razvoja Republika Srbije, Crne Gore i Hrvatske [Comparative Analysis of National Sustainable Development Strategies of the Republics of Serbia, Montenegro, and Croatia]. *Teme, 2,* 501–523.

Pallant, J. (2011). *SPSS – Приручник за преживљавање* [SPSS-Survival Manual]. Београд: Микро књига.

Pallant, J. (2011). *SPSS Survival Manual*. Buckingham: Open University Press.

Redclift, M. (2005). Sustainable development (1987–2005): an oxymoron comes of age. *Sustainable Development, 13(4),* 212–227.

Steurer, R., & Hametner, M. (2013). Objectives and Indicators in Sustainable Development Strategies: Similarities and Variances across Europe. *Sustainable Development, 21(4),* 224–241.

Steurer, R., & Martinuzzi, A. (2005). Towards a new pattern of strategy formation in the public sector: First experiences with National Strategies for Sustainable Development in Europe. *Environment and Planning C: Government and Policy, 23(3),* 455–472.

Stiglitz, J. E., Sen, A., & Fitoussi, J-P. (2009). *The Measurement of Economic Performance and Social Progress Revisited*. Paris: OFCE.

Talberth, J., Cobb, C., & Slattery, N. (2007). *The Genuine Progress Indicator 2006,* Oakland, CA: Redefining Progress.

Ustav Republike Srbije, *Službeni glasnik RS, br. 98/2006* [The Constitution of the Republic of Serbia, *"Official Gazette of the Republic of Serbia", № 98/2006*].

Veljković, N. (2006). Ekonomija i ekologija – izazov budućnosti [Economy and Ecology - The Challenge of Future]. *Teme, 3*, 479498.

Veljković, N. (2011). *Praćenje održivog razvoja u Srbiji* [Monitoring of Sustainable Development in Serbia]. Republika Srbija: MPZŽS – Agencija za zaštitu životne sredine.

Vos, K. J. (2005). Americanisation of the EU Social Model? *International Journal of Comparative Labour Law and Industrial Relations, 21(3),* 355–367.

World Bank. *Indicators*. (2017). Retrieved from http://data.worldbank.org/indicator.

УПОРЕДНА АНАЛИЗА ПОКАЗАТЕЉА ОДРЖИВОГ РАЗВОЈА ЗЕМАЉА ЗАПАДНОГ БАЛКАНА И ПОЈЕДИНИХ ЗЕМАЉА ЕВРОПСКЕ УНИЈЕ

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Резиме

Одрживи развој је врло сложен феномен и предмет је интересовања савременог друштва, услед чињенице да овај концепт захтева дугорочно усаглашавање економских, еколошких и социјалних циљева садашњих и будућих генерација, као и адекватну институционалну подршку. У складу са тим, показатељи одрживог развоја имају посебан значај при мерењу остварења утврђених циљева у оквиру усвојених стратегија одрживог развоја.

У овом раду је спроведена емпиријска анализа нивоа корелације показатеља одрживог развоја у периоду 2000–2012. године, и то пет земаља Западног Балкана (Албанија, Босна и Херцеговина, Македонија, Србија и Хрватска) и шест земаља (Бугарска, Мађарска, Пољска, Словачка, Словенија и Чешка), упоредивих према одређеним показатељима, које су, у посматраном периоду, постале чланице ЕУ (Европске уније) са још шест других земаља. Црна Гора, као земља Западног Балкана (ЗЗБ), изузета је из анализе услед недоступности статистичких података за кључне показатеље, а Хрватска је анализирана као ЗЗБ, пошто је тек 2013. године постала чланица ЕУ. Према Уставу Републике Србије, Косово се сматра саставним делом територије Републике Србије.

У раду је посматран период 2000–2012. године, који је веома значајан за ЗЗБ, односно њихову транзицију и настојање да постану чланице ЕУ. Период 2000–2004. године битан је за Мађарску, Пољску, Словачку, Словенију и Чешку (и још пет земаља – укупно 10 земаља), јер представља најважнији период њихове припреме за чланство у ЕУ. Период 2004–2008. године за поменуте земље представља период стварног прилагођавања и испољавања, како негативних тако и позитивних ефеката чланства у ЕУ. За Бугарску (заједно са Румунијом) овај период је такође значајан због припрема за чланство и самог уласка у ЕУ. Период 2008–2012. године битан је због избијања светске кризе и испољавања њених ефеката на све европске земље, док је период након 2012. године (2012–2015) у овом раду приказан информативно, према доступности статистичких података.

Упоредном анализом показатеља одрживог развоја ЗЗБ и одабраних земаља ЕУ, уочава се, поред осталог, да је недовољна теоријска и емпиријска основа за прецизну анализу најважнијих тема одрживог развоја. Ипак, анализом свих тема и доступних показатеља, може се извести закључак да постоји релативно висок степен слагања између нових земаља чланица ЕУ и ЗЗБ. Наиме, корелационом анализом утврђена је висока корелација или средњи ниво корелираности ЗЗБ. Имајући у виду све претходно наведено, јасно је да је убудуће неопходно унапредити прикупљање, приказивање и ажурирање података неопходних за праћење остварења стратегија одрживог развоја, као и развијање показатеља у оквиру најважнијих тема одрживог развоја,сагласно европској и међународно признатој методологији и пракси.