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ANALYSIS OF THE WESTERN BALKAN COUNTRIES' COMPETITIVENESS DETERMINANTS USING THE KEI METHODOLOGY

5**Abstract The purpose of this paper is to** analyse the development **of knowledge economy and its** importance for **the**

3**competitiveness of the Western** Balkans **countries. The** aim **of the**

research is

5**to evaluate the** development degree **of knowledge economy in** the Western Balkans **countries**

through the comparison of relevant indicators with the European Union countries. The research information base is the official World Bank data about values of "the knowledge economy index" (KEI). Comprehensive analysis leads us to conclusions about: a) the relative positions of the Western Balkans countries in relation to the EU countries, b) the development

34**state of knowledge economy in** analysed countries according **to**

the pillars of the knowledge economy index. The paper concludes by highlighting the implications and recommendations for conducting the economic policy in the area which encourages the development of knowledge economy and improves competitiveness. Key words: knowledge economy, competitiveness, Western Balkan countries JEL Classification: O 520, O 570 I. INTRODUCTION The challenges modern economies are facing in a constant quest to survive in a competitive game on the global market require continuous improvement of all activities in knowledge creation and its application in various fields. Such activities primarily involve innovation, research and development, and education and training of the workforce. The aim to keep up with the developed world economies requires constant competitiveness strengthening, whereby knowledge-based competitiveness is long-term sustainable. The

28**aim of this paper is to** establish **the** current position **of** the analysed **countries**

in relation to the European Union (EU) by reviewing the current development state in targeted groups of countries in terms of knowledge economy and point out the areas in which these countries need to intervene immediately. Group of the Western Balkans countries is in the focus of this study. Based on the analysis about the development level of the various knowledge economy pillars, it is possible to identify existing problems and shortcomings of innovation, countries' learning and development systems, individually, as well as to create appropriate measures of economic policy. II.THEORETICAL BACKGROUND Competitiveness based on knowledge is a prerequisite for economic prosperity in the global economy (Daniels and Radebaugh, 2002).

1**Knowledge is the key factor of** enterprise's **productivity and economic** development, in **any country, in terms of the dynamic, competitive struggle** on

the global market

(Krstić and Stanišić, 2013, p.152). Prerequisite for economic prosperity in the global economy is competitiveness based on knowledge. In the past, the economy has gained wealth and has raised living standard mostly thank to the

1**combination of natural resources,** labour, **and financial capital**

in the past, whilst modern economies and enterprises have strengthened their competitiveness based on knowledge. The power is

1**"moved" from those who** invest **money in the business to those who** invest **knowledge and skills** and **thus create value** (Andriessen, 2004). **The** knowledge society and **economy**

are based on several postulates which are following (Wickham, 2001). It is of the particular importance that each country creates a stimulating environment for development and institutional regime that provides

12**efficient mobilization and allocation of resources, stimulates creativity and** encourages **the efficient creation, dissemination and** application **of existing knowledge. Educated and skilled**

workforce in knowledge economy conditions, that continually improves skills, is very important for effective creation and usage of new knowledge. Creating

25**an effective innovation system** includes network connectivity **of** companies, **research centres, universities and other** public **organizations.**

Developing

4**a modern and adequate information infrastructure** in **the**

knowledge economy should ensure

16**effective communication, dissemination and** analysis **of information and knowledge** (Tisen **at**

al., 2000).

1**“A knowledge economy is the one in which knowledge in the form of intellectual** capital **is a primary factor of production” (Bedford, 2013, p. 278).** The **knowledge economy**

is actually based on three main postulates according to Steward (2001): a) Knowledge is what we buy, sell and do; b) Asset based on knowledge, so-called, intellectual capital, becomes more important for businesses than physical and financial assets; v) The progress in the new economy and the productive use of knowledge as a vital asset, mean that a company needs to implement a new business strategy.

1**In the era of knowledge economy,**

1**the wealth of the nation and the region depends on the level of knowledge and its effective**

application.

1**Knowledge economy** has **almost unlimited resources, because** a **man's ability to create knowledge** is, **in fact, unlimited. “The**

1**knowledge economy opens new** directions, **and offers unprecedented opportunities to produce and sell on a mass scale, reduce costs, and customize to the needs of consumers, all at the same time”** (Bratianu and **Dinca, 2010, p. 210).**

Knowledge organizations (Drucker, 1992) use

1**their intellectual resources as the main source of competitive advantage.** These organizations, **as a rule, have** small **tangible assets**

and compete on the basis of their intellectual value, and

1**creating strikingly different and unique combinations necessary to meet** the **significantly** changing **demands** of consumers **(Teece, 2000). These** are **organizations**

that learn and

> 1**their main feature is the ability to quickly** adapt **and** continually **innovate and restructure their** operations. **In the** era of **knowledge**

economy, the

> 1**achieved level of** society **development in** knowledge creation **and**

application has a significant impact on national competitiveness of countries. Measuring the progress of

> 1**individual countries in achieving the necessary conditions for building** a **knowledge economy, is** enabled **by the application of the** Knowledge Assessment **Methodology** (KAM) **of the World Bank Institute,** which determines the **Knowledge**

Economy Index (KEI) of individual countries. KAM methodology (Chen and Dahlman, 2005) for the evaluation of

> 1**progress towards** a **knowledge society,** involves **the analysis of structural and qualitative indicators** in **each country,**

which are classified into four basic pillars, crucial for the development of the knowledge economy and society: 1. Education. -

> 30**It is a key factor of competitiveness** in modern enterprises **and**

national economies. Enterprises and national economies are looking for competitive strength in creative ideas, innovative expertise and competence, which are, among other things, a result of the country's education system. Improvement of this system is of the greatest

> 1**importance for economic development and competitiveness** of **the** nation. 2. Innovation **system.**

- Innovation is a critical factor for the economic development of national economies, regions and individual companies. The issue of monitoring

> 1**innovation activities** at **the national economy** level **is complex because of the**

nature of innovation **(DOC, 2008).**

3.

1**Information and communication** technologies. - **The development of information and communication technologies in** contemporary **conditions is** one of **the most important** factors **of intensity and dynamics of economic development.**

4. The

1**institutional framework. - KAM methodology recognizes** the institutional framework **as a determinant of the knowledge economy index,**

understanding the customs

1**and non-tariff barriers, quality** of regulations **and rule of law. KEI**

4**is an aggregate index that** shows **the overall level of** achieved **development a** certain **country or region in the** area of **knowledge** society. By **the** values of the **KEI**

index and by its disaggregation, countries can more

1**easily identify all the challenges and opportunities offered to them in** a **way of creating the economy and society** based on knowledge. **This** way, **the readiness of countries in** the **competitive game in the modern**

economy is also evaluated, where knowledge and the possibility of its application

1**in the field of innovation, entrepreneurship,** research **and development, are recognized as a key factor**

for growth and development

1**in the** global **economy. Based on the** information about **the value of the**

index and subindices, each country can identify its key strengths and weaknesses by comparing with the results of other ranked countries in the world and in the region. Based on this, it is possible to create and implement the necessary economic and political solutions, define development programs, strategies and policies at the national and regional level. III. RESEARCH METHODOLOGY The

31**aim of this study** is **to examine the** development **of**

knowledge economy and competitiveness in the Western Balkans countries. The current state of the knowledge economy development, in the analysed countries, is determined by the value of the KEI index and rank according to the index on a global scale. The evaluation of development and improvement in the competitive position is made according to the value of GCI index and rank according to the index on a global scale. Research methods applied in this paper are: the method of analysis (segmentation), the method of comparison, benchmarking and the method of synthesizing (generalization). Analysis of the indicators' values related to the innovation systems, as one of the basis of the knowledge economy, is to be carried out through the following steps. Position assessment of the Balkan countries, in terms of knowledge economy development and possible effects of economic crisis on the condition and extent of these economies, begins by examination of the analysed economies' current position in the world ranking according to the value of the aggregate KEI index (World Bank Institute, 2004). This way, the assessment of relative positions in the observed economies, in relation to other countries of the world, is allowed, but we can also identify the current situation

1**in terms of the knowledge economy development** degree. **In** order **to** identify **the**

impact of individual areas (so-called

26**pillars of the knowledge economy) on** which **the knowledge economy** is based, **the**

analysis will proceed in the direction of decomposing aggregate KEI index on subindices and the detection of the dynamics of key indicators for the knowledge economy pillars, as well as partial indicators within these pillars. IV. RESEARCH RESULTS AND DISCUSSION

1**In order to assess the** positions **of** different **countries in the knowledge economy**

development, table 1 contains the ranking list according to the score of the aggregate KEI index. The ranking list includes the EU countries and the

7**Western Balkan countries (Albania, Bosnia and Herzegovina, Croatia,**

Macedonia and Serbia) 1. Table 1. **The achieved** results in **the**

first pillar of the knowledge economy - education (2012) Rank Country KEI Rank Country KEI Rank Country KEI 1 Sweden 9.43 21 Spain 8.35 36 Greece 7.51 2 Finland 9.33 24 France 8.21 37 Latvia 7.41 3 Denmark 9.16 26 Czech Republic 8.14 38 Poland 7.41 4 Netherlands 9.11 27 Hungary 8.02 39 Croatia 7.29 8 Germany 8.90 28 Slovenia 8.01 44 Romania 6.82 11 Ireland 8.86 30 Italy 7.89 45 Bulgaria 6.80 14 United Kingdom 8.76 31 Malta 7.88 49 Serbia 6.02 15 Belgium 8.71 32 Lithuania 8.21 57 Macedonia 5.65 17 Austria 8.61 33 Slovakia 8.14 70 Bosnia and Herzegovina 5.12 19 Estonia 8.40 34 Portugal 7.61 82 Albania 4.53 20 Luxembourg 8.37 35 Cyprus 7.56 Source:

11**http://info.worldbank.org/etools/kam2/KAM_page5.asp** According to **the** amount **of the**

aggregate KEI index in 2012, the

7**Western Balkan countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia)** are significantly behind **the**

EU countries (World Bank, 2012). Developed economies from northern Europe occupied the top of the world list of 146 countries, due to the fact that all the pillars of the knowledge economy are well developed and balanced in these countries. The first four positions in the world rankings belong to the EU countries (Sweden, Finland, Denmark and the Netherlands). If the isolated list, which includes the EU and the Western Balkan countries, we come to a conclusion

3**that the Western Balkan countries** are at **the** bottom according to **the**

degree of the knowledge economy development. Almost all the EU countries are ranked better than the Western Balkans countries. Even less, developed EU countries, such as Bulgaria and Romania, show better results in building a knowledge society and knowledge economy. If the EU membership is a strategic goal of the analysed Western Balkan countries, its realization depends largely on how much these countries are able to converge to EU standards, according to the criteria of the knowledge economy. Croatia realizes the best rank among the Western Balkans countries, on the 39th position, with the index value of 7.29. Serbia occupies the 49th position, with the index value of 6.02, followed by Macedonia on the 57th position (KEI index value of 5.65), Bosnia and Herzegovina on the 70th position (KEI value index of 5.12) and Albania is at the bottom, at the 82nd place, with the lowest KEI index of 4.53. When we compare their positions with the EU countries, the lag is worrying. In order to identify the key weaknesses of the analysed countries,

2**in terms of** achieving **the** conditions **for the knowledge society** creation **and**

revealing areas where it is necessary to make progress and improve rank, it is necessary to analyse the

results of the individual pillars in the knowledge society, based on which the aggregate index is calculated. According to this analysis, it is possible to determine which factors influence the change in the ranking position of the Balkan countries compared to the previous ranking, as well as the whereabouts of the key weaknesses that hinder their further progress towards knowledge society. Analysis of education area and the results achieved in the

11**first pillar of the knowledge society is** based on **the**

measurement of three key indicators, which are the base for determining the value of Education index. Table 1 Montenegro is excluded from the group of Western Balkan countries for the purposes of this analysis, due to the lack of data on the value of KEI index. In fact, economy of Montenegro was not subject to measurement and research since the beginning of the KEI index measurement, and so it is not possible to rank this economy, for further reasoning and analysis. 2 shows key indicators for the first pillar of the knowledge society (the average length of schooling, the

1**gross percentage of the population in secondary education** and **gross percentage of the population in** higher **education),** and **the**

achieved results in the selected countries measured and additional indicators which are relevant for assessing the state of education and the ability to create, exchange and application of knowledge. Table 2. The achieved results in the first pillar of the knowledge economy - education (2012) Indicator Croatia Serbia Macedonia B&H Albania EU-27 W. Balkan Education index 6.15 5.98 5.15 5.77 4.81 7.91 6.17

9**Adult Literacy Rate (% age 15 and above), 2007.** 98 **.76**

97.77 97.12 97.81 95.94 98.97 97.48 Average Years of Schooling, 2010. 8.99 9.16 / / 10.26 10.46 9.47 Gross Secondary Enrollment rate, 2009. 95.21 91.48 83.24 91.21 72.36 102.56 86.7 Gross Tertiary Enrollment rate, 2009. 48.95 49.85 40.64 37 19.09 63.25 39.11 Internet Access in Schools (1-7), 2010. 4.7 3.5 4.4 3.8 3.8 5.27 4.04

29**Public Spending on Education as % of GDP,** 2009. 5 5 / / / **5**

5 15-year-olds' math literacy (PISA), 2009 (1-10) 4.1 3.44 / / 1.15 6.24 2.9 15-year-olds' science literacy (PISA), 2009 (1-10) 4.59 3.28 / / 1.15 6.30 3 Prof. and tech. workers as % of labour force, 2008 24.8 23.41 18.99 / / 29.23 22.4 Extent of Staff Training (1-7), 2010 3.1 3 3.3 2.7 4.2 4.37 3.26 Brain Drain (1-7), 2010 2.3 2 2.2 2 2.7 3.84 2.41 Source:

2**http://info.worldbank.org/etools/kam2/KAM_page3.asp?default=1** Comparison of **the values** shown **in the**

last two columns (average values for the 27

3**EU member states** and **the** five **Western Balkans** countries) indicates that **the**

Balkan countries are still significantly behind the EU countries, according to the first

1**pillar of the knowledge economy, and** according to all **the**

listed indicators. If the observed Balkan countries' aim is to make education a national priority, and knowledge a key development resource, greater investments are needed in this area. Internet access of individuals who are educated is very limited (with the exception of Croatia), and this fact ranks Balkan countries at the bottom of the world list based on this criterion. The consequences of neglecting education segments, as elementary pillars for the development of knowledge economy, are evident in the results which primary school and secondary school students show on standardized tests in math and science, and in the literacy in PISA tests. Compared with their peers from the 27 EU countries, students from the Balkan countries show lower levels of literacy, functional knowledge and the skills to apply it in solving specific problems. When these facts are observed from the workforce education point of view, it is noticed that the percentage of professional workers in the Balkan countries' labour force is lower for almost 7% compared to the EU. Very limited opportunities for education and training in the workplace contribute to the largest percentage of the under-qualified labour force and lack of highly educated employees. Especially characteristic problem of education in the Balkan countries is the tendency that talented and skilled individuals leave the country in search for better living and working opportunities. Serbia and Bosnia and Herzegovina have the lowest score - on a scale from 1 to 7 (where 1 means that it is common for talented individuals to leave the country, and 7 means that almost always they stay in the country), a worrying score 2 is observed. For the comparison, this indicator is 5.4 in Sweden, 5.2 in the Netherlands and the United Kingdom, 3.1 in Croatia. The fact is that very low value of this indicator influence, largely, on the possibility of building a knowledge society. The situation is alarming in all observed countries, which are also facing serious problems of constant outflow of highly educated labour. In relation to the measurement from 2009 (Krstić, Džunić, 2011), the situation has dramatically worsened in Croatia (decrease is measured in the value of indicators from 3.1 to 2.3), while the situation is standardly unfavourable in other countries of the observed sample. Also, comparing with the measurements from 2009, it can be established that the three post-crisis years have left a significant impact on the education pillar. The average education index is reduced from 8.15 to 7.91 in European countries, while the index value in the Western Balkans has improved from 5.70 to 6.17, and the gap between the Western Balkans and the EU is somewhat reduced. Key indicators for measuring the progress of the country in a pillar of innovation are: copyrights overturn per capita, the

1**number of professional and scientific articles per million** inhabitants and **the number of** registered **patents per million**

inhabitants. The values of the key indicators, as well as the other indicators, are relevant for the assessment of the innovation systems in Serbia and selected groups of countries shown in Table 3. Based on the presented values, it is possible to assess country's ability to create an environment suitable for research and development, to encourage the creation of new products, processes, knowledge and

technology, as well as to realize the commercialization of research results through a network of research institutions, regulations and procedures. Table 3. The achieved results in the

1**second pillar of the knowledge economy** - the system of **innovation**

(2012) Indicator Croatia Serbia Macedonia B&H Albania EU-27 W.Balkan Innovation index 7.66 6.47 4.99 4.38 3.37 8.21 5.37 Copyrights overturn, 2009. 55.25 28.27 12.91 4.87 6.39 572.54 21.53 FDI Outflows as % of GDP 0.52 0.82 -0.02 0.05 0.20 4.52 0.31 FDI Inflows as % of GDP, 2004-08. 5.71 8.95 6.36 7.41 3.87 5.70 6.46

4**Total Expenditure for R&D as % of GDP,** 2008. 0.9 **0.** 38 **0.**

23 0.02 0.15 1.51 0.34 University-Company Research Collaboration (1-7), 2010. 3.40 3.50 3.50 3 2.2 4.34 3.12 Researchers in R&D / Mil. People, 2009. 2485.33 2473.68 620,67 411.31 247.83 4984.67 1247.76 S&E Journal Articles / Mil. People, 2007. 248.34 143.2 28.2 14.21 3.92 428.88 87.57

9**Patents Granted by USPTO / Mil. People,**

Avg. 2005-09. 3.47 0.35 0.10 0.11 0.00 40.04 0.81

9**Private Sector Spending on R&D (1-7),** 2010. 3.10 **2.**

60 2.60 2.60 2.70 3.85 2.72

6**High-tech Exports as % of Manuf. Exports, 2007.**

11.00 4.00 3.00 3.00 1.00 15.04 4.4 Source:

2**http://info.worldbank.org/etools/kam2/KAM_page3.asp?default=1 The** data presented **in the table**

can be interpreted as an indicator of investment in innovation system in these countries, but also as an indicator of the results in this field. According to the index of innovation, Croatia takes the best position in the ranking, with a high 7.66 index points, while Serbia is on the second place, with the index value of 6.47. In searching for the causes of the current state of innovation system in Balkan countries, first, it is necessary to analyse indicators of inputs in the innovation system. The percentage of gross domestic product, allocated to

6**fundamental and applied research and experimental work leading to new**

products and processes,

is the highest in Croatia, in the amount of 0.9%, which is well below the European average. If, at the same time, we take into account that the developed European countries have a much higher investment in research and development sector (Sweden – 3.82%, Finland - 3.41%, Germany – 2.52%), especially given the size of gross domestic product in these countries, investments in this sector in the Western Balkans, in absolute terms, are far lower than the European investment. If we add to this the value of the investments of private companies in research activities, which on a scale of 1 to 7 (1 is the lowest and 7 is the highest value) occupies a modest score of 2.72, it can be noted that the

19**level of public and** private **investment in** research **and development**

sector in the Balkan countries is extremely low. The indicators of investments in innovation also include the number of researchers engaged in research and development, which is four times higher in the European countries than in the Balkan countries, as well as cooperation between higher education institutions and the economy, which is sited relatively low on a scale from 1 to 7, with 3.12 points. Indicators that measure the value of the results, achieved in the field of innovation in the observed countries, do not inspire optimism. In fact, despite the existing investment in research and development activities, the main results (copyrights overturn, a number of scientific articles and the number of registered patents) are extremely low compared to the average values of these indicators for the European Union countries. Amounts paid

8**between residents and non-residents for the authorized use of intangible, non-financial assets and proprietary rights (such as patents, copyrights, trademarks and franchises),**

expressed in millions of U.S. dollars and weighted by population, are on average 572.54 for the EU, while the average of the Western Balkans countries is many times lower – 21.53. Bearing in mind that this is a key indicator of the innovation pillar, based on which values normalized value of KEI are calculated, it is concluded that the position of the analyzed Balkan countries in the global ranking of the knowledge economies cannot be improved without increasing the value of this indicator. The situation is similar to the number of registered patents, reflecting the success of the innovation system of a country and the measurable results of research and development. While European average is 40.04 patents registered annually, Serbia registers 0.35 patents, Bosnia and Herzegovina registers 0.10 patents. Croatia is a leader in the region in this area, with 3.47 patents registered annually. Analysis of the published technical and scientific articles (per million inhabitants) confirms the low efficiency of the innovation system in the observed countries - compared to European 428.88, an average of 87.57 articles published in the analysed Balkan countries. Finally, the foreign trade effects of the innovation system, which are reflected in the percentage

17**share of high-tech products in total exports**

of the country, indicate that a very serious task of improving the innovation system is in front of the

Western Balkan countries, if they want to advance in the field of innovation

18**in the near future, in order to** progress on **the**

scale of knowledge economy.

17**Information and communication technology** (ICT) and **the knowledge economy development.** Measurement results of **the**

observed Balkan countries in the ICT sector is carried out based on three key criteria: telephone number (landline and mobile) per 1000 inhabitants, the

1**number of computers per 1000** inhabitants and **the number of Internet users per**

1000 inhabitants. ICT index is used to determine how much information and communication technologies are available in a country, which enable effective creation, exchange and processing of information. Table 4 shows the specified key indicators, and some of the most important additional indicators of ICT pillar in the knowledge economy. Table 4. Achieved results in the third pillar of the knowledge economy - ICT sector (2012) Indicator Croatia Serbia Macedonia B&H Albania EU-27 W.Balkan ICT index 8.00 7.39 6.74 4.77 5.26 8.05 6.43 Total Telephones per 1000 People, 2009. 1780 1770 1170 1130 1440 1663 1458 Computers per 1000 People, 2008. 450 180 370 60 50 478 222 Internet Users per 1000 People, 2009. 500 560 520 380 410 666 474

6**Availability of e-Government Services (1-7), 2008.**

3.30 2.78 3.51 2.14 2.72 4.75 2.89 Source:

2**http://info.worldbank.org/etools/kam2/KAM_page3.asp?default=1** ICT index **values** measured **in the**

countries in the region indicate an apparent lag behind European Union countries, with the exception of Croatia, which fits into the European average according to the majority of indicators. Certainly, the results achieved in the 10 most developed European countries are, at the moment, unattainable for any of the analysed Western Balkan countries. Croatia has conducted, just before joining the European Union, a series of comprehensive reforms that were a prerequisite for membership, which is the most evident in the area of electronic government services. Significant differences of the Balkan countries in relation to the EU are reflected in twice the lower number of computers per 1000 inhabitants, as well as in much lower number of internet users. The fourth pillar of the knowledge society is

5**Economic Incentive and Institutional Regime** (EIR). How is **the economic and institutional regime**

of a country conducive to effective implementation

27**of existing and new knowledge and the** development **of entrepreneurship?**

This is determined based on the following

2**indicators: tariff and non-tariff** trade **barriers, regulatory quality, rule of law. The**

value of the indicators of the fourth pillar of the observed pattern is shown in Table 5. Table 5. The achieved results in the fourth pillar of

16**the knowledge economy - Economic Incentive and Institutional Regime**

(2012) Indicator Croatia Serbia Macedonia B&H Albania EU-27 W.Balkan EIR index 7.35 4.23 5.73 5.55 4.69 8.52 5.51 Tariff & Nontariff Barriers, 2011. 87.60 75.20 83.60 86 79.80 86.98 82.44 Regulatory Quality, 2009. 0.55 -0.10 0.32 -0.06 0.28 1.24 0.2 Rule of Law, 2009. 0.22 -0.41 -0.22 -0.39 -0.52 1.18 -0.26 Days to Start a Business, 2011. 7 13 3 40 5 14 13.6 Control of Corruption, 2009. 0.03 -0.19 -0.03 -0.31 -0.40 1.06 -0.18 Government Effectiveness, 2009. 0.64 -0.15 -0.14 -0.39 -0.52 1.16 -0.11

22**Source: http://info.worldbank.org/etools/kam2/KAM_page3.asp?default=1**

The structure **of**

selected indicators leads to a conclusion that modern economies, on the way towards a knowledge society, must work on creating a successful legal and economic framework, including effective state administration, fight against corruption and regulatory system which will ensure smooth progress of economic transactions - protection of property rights and contract execution certanty. Knowledge economy requires institutional regime that will encourage improving the public administration quality (in the area of effective governance, the quality of public goods, reducing corruption, increasing economic accountability of the bureaucracy), and encourage innovation and entrepreneurship in the private sector. According to the EIR index, the situation in the Western Balkans is not uniform - Croatia stands out as a leader in the region in

1**this pillar of the knowledge economy,** taking **the** high 42nd position **on**

the list of 146 countries and the index value of 7.35 (by comparison, the average index value for the EU is 8.52). Constant progress of Croatia in this field in the last decades, is largely a consequence of the

reforms that the country needs to implement in the EU accession process. The next country, according to the success of institutional reforms, is Macedonia (on the 59th position), followed by Bosnia and Herzegovina (on the 63rd position) and Albania (on the 71st position). Serbia records visible failures in this area and has the lowest rank among the observed Balkan countries - currently Serbia is placed in the 81st position, which is even lower than some African countries. The problems which caused such low positions of the majority of countries in our sample, can be identified if we analyse the data based on which the EIR index is calculated. First of all, the intensity of trade protectionism is one of the important factors of the index height, and the trade freedom restriction degree coincides with the positions of individual countries on the ranking list. The highest level of domestic economy protection has been recorded in Serbia, and the lowest in Croatia. Regulatory quality is an indicator that measures the frequency of non-market minded policies applied by the government,

> 10**such as price controls or inadequate bank supervision, as well as the** costs caused **by excessive regulation of foreign trade and** economic **development.** According to **the**

value of this indicator, all Balkan countries are far behind the European average, but we must emphasize that the quality of regulation in Serbia is rated as the worst. If you add a low score of the rule of law (a low level of trust and respect of social norms, the

> 32**incidence of crime,** low efficiency **and** reliability **of the judiciary, the**

problems in the implementation of the contract), it is clear why the indices of selected countries have low value. With a durable bureaucratic procedures when starting a company, and the lack of determination in fighting the corruption, the fourth pillar of the knowledge economy can be marked as an area in which the Western Balkan countries should urgently take measures to fix their position on the list of the aggregate KEI. V. CONCLUSION When it comes to education as a basis

> 2**for the** development **of the knowledge economy, the** observed Western Balkan **countries**

significantly lag

> 19**behind the** EU **in terms of investment in education.**

Also, students from the Balkan countries show lower levels of literacy, functional knowledge and skills. Albania and Macedonia have the lowest index of education, and Croatia and Serbia have the largest index in a group of these countries. Based on

> 2**a comparison** with **the** average **values of the** educational development **indicators** in **the**

European countries, it can be concluded that education policy and strategy makers in Balkan countries should pay particular attention to preventing the outflow of highly educated labour force, increasing the number of people with tertiary education, improving mathematical literacy of children in primary education, improving the system of employee training. Croatia has the largest innovation index, followed by Serbia, while other countries in the sample are significantly behind them. Basically, all analysed countries have low scientific research activity and drastically deviate from the average value of the EU-27. Also, recommendations for economic policy makers is that it is necessary to increase investment in research and development and to establish and fund research centres

18**in order to increase the number of** researchers, the number **of**

patents and other results of intellectual work. In addition, it is necessary to increase cooperation between the science sector (higher education) and economy in the Balkan countries. These countries are also very poor in terms of scientific research at universities, where a discrepancy of the Balkan average in relation to the EU-27 average is noticed. The condition in the third

23**pillar of the** knowledge **economy is** assessed according **to the** values **of the ICT** index. **The**

Western Balkan countries are far lagging behind in the number of computers, services of electronic administration, the number of internet users in comparison with the EU-27. The fourth

1**pillar of the knowledge economy is evaluated by**

EIR index, which shows only relatively satisfactory values in Croatia, while the other Balkan countries have low values of this index compared to the EU-27 average. All partial indicators of

1**Economic Incentive and Institutional Regime pillar,**

observed in the Balkan countries, need full and substantial commitment of the economic policy makers, because of the worst situation in

1**this pillar of the knowledge economy.**

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