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Innovativeness and Competitiveness of the Selected European Countries in 2012

Scientific article

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KEY WORDS: innovativeness of the economy, competitiveness of countries, Western Balkans, EU

ABSTRACT: The paper analyses the relationship between innovation outputs and innovation inputs, as well as the relationship between the global innovation index and the global competitiveness index of six countries from the Western Balkans (Albania, Bosnia and Herzegovina, Macedonia, Serbia, Croatia and Montenegro), and a group of five selected European Union countries, of which five are immediately adjacent to this region (Bulgaria, Greece, Hungary, Romania and Slovenia), whereas Austria, as a highly developed and highly innovative country, is geographically located very close to the Western Balkans. The main goal is to come up with the answer to the questions: a) how much does the value of innovation inputs determine the value of innovation outputs in the Western Balkans countries, on the one hand, and the selected EU countries from their immediate surroundings, on the other hand, and b) was there the interdependence between the value of the global innovation index and the global competitiveness index of the selected European countries in 2012.

Znanstveni prispevek

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KLJUČNE BESEDE: inovativnost gospodarstva, konkurenčnost držav, Zahodni Balkan, EU

POVZETEK: Prispevek analizira odnos med inovacijskimi vložki in inovacijskimi rezultati ter odnos med globalnim indeksom inovacij in globalnim indeksom konkurenčnosti šestih držav Zahodnega Balkana (Albanija, Bosna in Hercegovina, Makedonija, Srbija, Hrvaška in Črna Gora) in skupino pet držav Evropske unije, ki so v neposredni bližini regije (Bolgarija, Grčija, Madžarska, Romunija in Slovenija), medtem ko je Avstrija kot visoko razvita in inovativna država geografsko zelo blizu Zahodnega Balkana. Glavni cilj je odgovoriti na vprašanje: a) koliko vrednost inovacijskih vložkov določa vrednost inovacijskih rezultatov na Zahodnem Balkanu in v izbranih državah EU, ki so v njihovi neposredni bližini, ter b) ali obstaja medsebojna odvisnost med vrednostjo globalnega indeksa inovativnosti in vrednostjo globalnega indeksa konkurenčnosti izbranih evropskih držav v letu 2012.

1 Introduction

As a factor of competitiveness, innovativeness has become a preoccupation of macroeconomic research. The growing share of new products and services, i.e. innovations, in the creation of the gross domestic product is one of the key preconditions of accelerating economic growth and improving the competitiveness of countries.

In modern economic conditions, the high competitiveness of the economy, i.e. its long-term economic growth, is predominantly based on innovation and knowledge. There is a positive correlation between the innovativeness of the economy and its competitiveness on the global market. Efforts to implant innovativeness into the core of competitiveness have become massive and widespread over the last couple of years, including major changes in the leadership responsibilities and development, cultural values, distribution of resources, knowledge management, award and recognition

systems, traditional hierarchy, measuring and reporting systems, and a whole range of other management practices and policies (Skarazynski and Gibson, 2008).

The subject of this paper is to present innovativeness of the economy and the competitiveness of eleven European countries in 2012. The selected countries are divided into two groups. The first group consists of six countries of the Western Balkan (Albania, Bosnia and Herzegovina, Macedonia, Serbia, Croatia and Montenegro), whereas the second group includes five EU countries from their surrounding (Bulgaria, Greece, Hungary, Romania and Slovenia). The aim is to use the regression analysis and the data from the Global Innovation Index 2012, in order to find a link between innovation inputs and innovation outputs of the selected European countries, as well as to reach an acceptable answer to the question of how much the value of innovation inputs determines the value of innovation outputs in the Western Balkans, on the one hand, and the selected EU countries from their immediate surroundings, on the other hand. Furthermore, based on the information contained in the Global Innovation Index 2012, and the data from the Global Competitiveness Index 2012-2013 of the World Economic Forum, an attempt has been made to analyse the correlation between innovativeness and competitiveness of these countries in 2012 (Cvetanović, Mladenović and Miličević, 2012).

The answer to the question of interdependence of the values of innovation inputs and innovation outputs has been obtained by using the statistical analysis, known as the scatter diagram. This is a common way of presenting the correlation (direction and degree of quantitative variation agreement) between two variables. Depending on the answer to the question to what extent the value of innovation inputs determines the value of innovation outputs, it is possible to provide useful information to the economic policy and, in particular, innovation policy makers, as the innovation policy is becoming an increasingly important component of development policy, and the determinant of the most appropriate direction that the incentives and other state measures should take.

The paper consists of the subheadings on the innovativeness of the economy, the competitiveness of the country, as well as the empirical analysis of the relationship between: a) innovation inputs and innovation outputs of the selected European countries in 2012, and b) the Global Innovation Index and the Global Competitiveness Index in 2012.

2 Innovativeness of the Economy

Innovativeness refers to the ability of the economy, companies or individuals to transform new business ideas into new products, services, technologies or markets. The basic meaning of innovativeness refers to the process of coming up with the new products and services in a more efficient manner compared to the previous period.

Innovativeness is the key determinant of economic growth (Link and Siegel, 2002) and improvement of the competitiveness of countries (Porter, 1990). In fact,

it is an extremely complex process, which depends on a number of factors. During the process of creating innovation in a country, creators of innovation interactively support this process, enhancing and exchanging knowledge, information, experience and other resources (Edquist, 1997)

Improving innovativeness involves significant and appropriate state policies of support. In the past, policies of support to innovations predominantly focused on investments in research and development, while in current conditions, they are much more complex. They rest on a number of factors that affect the improvement of productivity and, based on thereon, a clear policy of support to innovative efforts of companies and individuals is created.

The need for measuring the innovativeness of the economy has intensified over the last two decades, in parallel with the development of the system of the world economy, which is predominantly shaped by the process of globalisation and great achievements in the field of information and communication technologies. This is understandable given the fact that the innovativeness of the economy is not only a key driver of economic growth and improvement of the competitiveness of countries, but is also essential for the improvement of the basic performance of social development, the quality of life and the global environment.

The innovativeness of the economy is usually expressed by the so-called composite indices. The composite indices are aggregate indicators of individual indicators, as well as of weight coefficients that indicate the relative importance of each individual indicator. They are increasingly recognised as useful tools in economic research. Their main characteristic is reflected in the ability to quantify the complex phenomena, through the simplification of information, in order to better understand certain phenomena, both on the part of decision makers and the public (Cvetanović and Novaković, 2014).

The use of composite indices has proven to be particularly useful in the comparative research of innovative performance of individual countries. This is primarily due to their ability to describe complex concepts through a simple measure, which can be used as a performance benchmark. However, the composite indices can also point to incorrect information if they are poorly designed or misinterpreted. Irrespective of that, there has been a rapid growth in their use in recent years.

Recognising the key role of innovations in the economic development of individual countries, and having seen the importance of the innovativeness of the economy for the economic progress of individual countries, the Confederation of Indian Industry, together with INSEAD The Business School for the World and Canon India, created the Global Innovation Index, whose primary goal is to emphasise the level of innovativeness of certain countries.

The structure of the global innovation index is composed of two sub-indices: the innovation input sub-index and the innovation output sub-index. Each of them is based on pillars. The input sub-index is comprised of five pillars, focusing on the innovative potentials of the national economy: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication and (5) Business sophistication.

The innovation output sub-index consists of two pillars that show the real results of innovations: (1) Scientific outputs and (2) Creative outputs. Although this sub-index includes only two pillars, it has the same importance in the calculation of the global innovation index as the innovation input sub-index.

Each pillar is divided into sub-pillars which stand for the aggregates of a large number of indicators. The input parameters define the suitability of the environment for the creation and implementation of innovations in the economy. The outputs are the proof of the results of innovation inputs (patents, trademarks, copyrights, creative products, employees in the field of knowledge-based services, the share of exports of high-tech products in total exports, etc.).

Although the results of all the twelve pillars are shown separately, it is important to know that they are not independent. On the contrary, they are intertwined so that weaknesses in one area tend to have a negative impact on other areas. For example, it is difficult to achieve a satisfactory level of innovativeness (pillar twelve) without a healthy, well-educated and trained labour force (pillars four and five) that is willing to adopt new technologies (pillar nine), and without an efficient commodity market that allows the placement of innovations on the market (pillar six). Although the pillars are grouped into one index, measures are indicated for each of the twelve pillars separately because this provides insight into specific areas that a certain country needs to improve.

Each pillar is divided into three sub-pillars, composed of individual indicators. The result of each sub-pillar is calculated as the average value of its individual indicators. The result of each pillar is the average of the results of its sub-pillars. The model of the global innovation index is each year redefined in order to improve the evaluation of innovativeness of certain countries.

The topicality of the question to what extent the value of innovation inputs determines the value of innovation outputs has brought this issue to the surface. Depending on the answer to that question, it is possible to provide useful information to the economic policy and, in particular, innovation policy makers, as the innovation policy is becoming an increasingly important component of development policy, and the determinant of the most appropriate direction that the incentives and other state measures should take.

3 Competitiveness of the Country

In the theoretical sense, a country's competitiveness is a controversial phenomenon. Moreover, a number of researchers explicitly note that the quantification of a country's competitiveness is not an economic issue of a special interest (Schuller and Lidbom, 2009). Another group of economic analysts argue that companies need to be competitive, and not the countries. When companies cannot compete, they disappear (Krugman, 2004). The fact is, however, that the complexity of a country's competitiveness is increasingly present in theoretical, as well as empirical studies (Fagerberg, 1988).

The World Economic Forum defines competitiveness as the set of institutions, policies and factors which determine the level of productivity of a country. The level of productivity determines the sustainable level of prosperity that an economy can achieve and maintain for a longer period of time (Schwab, 2009). The identification of a country's competitiveness, including its ability to export goods and services to foreign markets, is a too narrow approach, which is not in line with the current economic conditions. The interpretation of a country's competitiveness as an opportunity to increase wealth finally comes down to the productivity of work, since the higher national income means higher work productivity.

The concept of a country's competitiveness is firmly incorporated into economic and development policies. Therefore, the analysis of competitiveness of a country is an important dimension of the development policy, which is largely focused on finding the ways of improving the quality of key macroeconomic performance. Although it is clear that a country's competitiveness is essentially correlated with its economic performance, the fact is that this complexity is increasingly perceived in relation to the relative position of the country to other countries, and much less to its accumulated wealth.

There is no generally accepted methodology for the quantification of a country's competitiveness. In practice, there are several approaches to its measurement, among which the most significant is the Global Competitiveness Index, developed by the World Economic Forum. The model operates with more than 150 variables, grouped into twelve pillars. The Global Competitiveness Report 2012-2013 contains data for 144 countries. The Global Competitiveness Index groups the factors influencing the productivity and competitiveness of a country into twelve pillars: Institutions, Infrastructure, Macroeconomic stability, Health and primary education, Higher education and training, Goods market efficiency, Efficient labour market, Developed financial market, Technological readiness, Market size, Business sophistication and Innovation.

Each of the aforementioned pillars affects the competitiveness of the economy independently, as well as in interaction with other pillars. The factors are evaluated by using the so-called "hard data" (inflation rate, the number of Internet users, life expectancy, etc.), and the so-called "soft data" (the result of an opinion poll of executive managers, which is conducted every year by the World Economic Forum, where the current state of important social and economic phenomena, such as corruption, trust in the institutions of the system, is quantified by values from 1 to 7).

The importance of certain factors of competitiveness depends on the level of economic development of an individual country. For a country that is in the initial stages of development (factor-driven economy), the factors of competitiveness such as institutions, infrastructure, the macroeconomic stability, the health of the population and primary education are of crucial importance. For a country in a more mature stage of development, factors such as higher education and training, goods market efficiency, labour market efficiency, financial market sophistication, knowledge and use of technology, and market size are becoming the most important for the country's competitiveness. Finally, for a country in the third phase of competitiveness, innovations are of primary importance for the economic development. Depending on the phase of the

economy of a certain country, the factors are divided into three groups and assigned different weights when calculating the global competitiveness index.

Depending on the stage of development of certain economies, the greater value is given to the factors that are the most important in that stage of development. To calculate the global competitiveness index, countries are divided into the stages of development based on the value of the gross domestic product per capita in US dollars.

4 Empirical Analysis

In order to get the adequate answer to the question of the interdependence of innovation inputs and innovation outputs, we will use a well-known scatter diagram for the statistical analysis. This is a common way to display the correlation (direction and degree of quantitative variation agreement) between two variables.

Table 1 provides an overview of the value of the global innovation index (column 2), the values of innovation inputs (column 3) and innovation outputs (column 4) of the Western Balkan and the five selected EU member states on the basis of the data of the Global Innovation Index 2012. Column 5 gives an overview of the value of the global competitiveness index for the analysed European countries in 2012, based on the data of the Global Competitiveness Index.

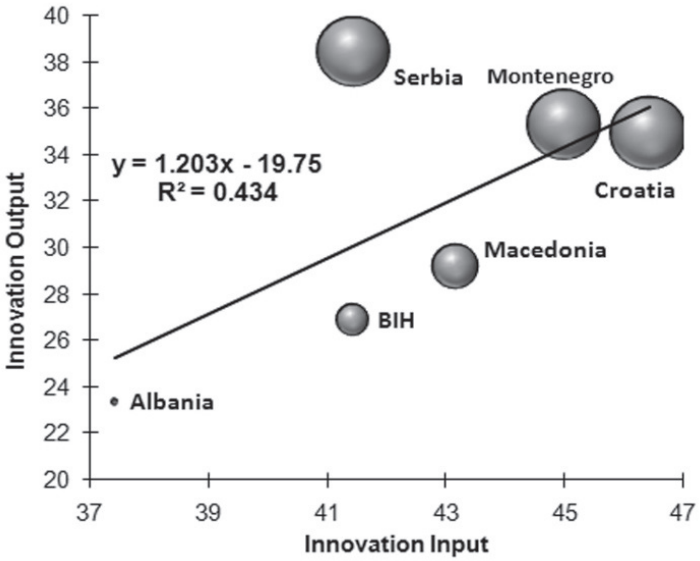
Table 1: The Global Innovation Index and the Global Competitiveness Index of the selected European countries in 2012

Country	*Global Innovation Index*	*Innovation inputs*	*Innovation outputs*	*Global Competitiveness Index*
Austria	53.10	59.45	46.75	5.22
Albania	30.38	37.42	23.35	3.91
B&H	34.17	41.44	26.90	3.93
Bulgaria	40.67	45.55	35.80	4.27
Croatia	40.68	46.43	34.92	4.04
Hungary	46.54	51.18	41.89	4.30
Macedonia	36.18	43.17	29.19	4.04
Montenegro	40.15	45.00	35.30	4.14
Romania	37.78	43.91	31.66	4.07
Serbia	39.95	41.45	38.45	3.87
Slovenia	49.92	53.21	46.63	4.34

Source: The Global Innovation Index 2012, INSEAD and Global Competitiveness Report 2012-2013, World Economic Forum.

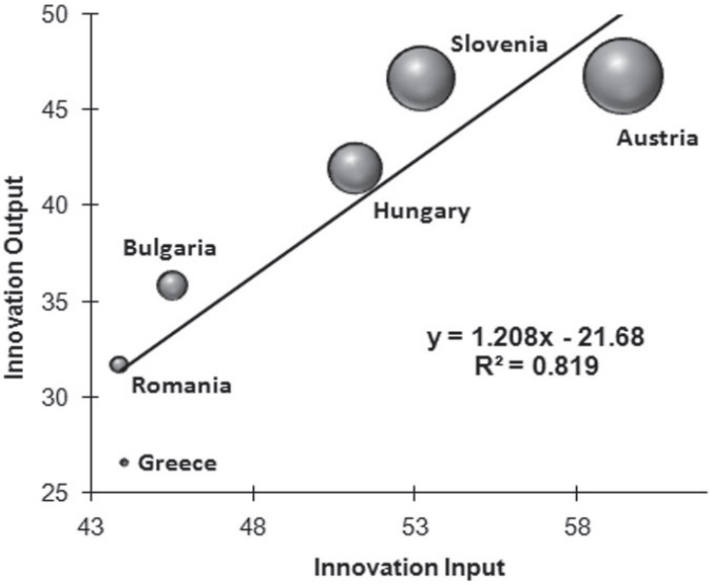
The standard way to show the connection (direction and degree of quantitative variation agreement) between two variables is a scatter diagram. It is a kind of a common spot diagram. Figure 1 shows the scatter diagram of the relationship between the variables of Innovation Input and Innovation Output in the Western Balkan.

Figure 1: Scatter diagram for the Innovation Input Sub-Index and the Innovation Output Sub-Index for the Western Balkans countries



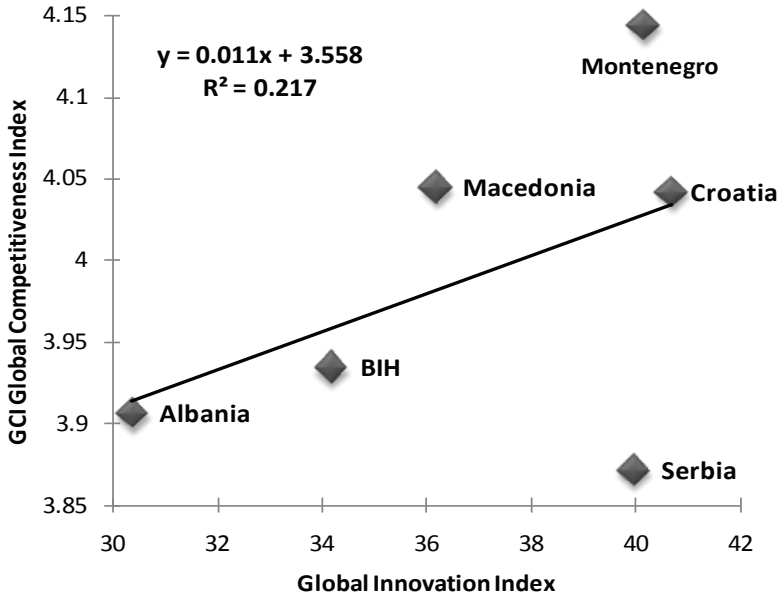
A graphical representation of data pairs of the variables, the Innovation Input Sub-Index and the Innovation Output Sub-Index, for the six countries of the Western Balkans shows little interdependence between the variations of observed variables. Customising the linear form of interdependence and analysis of the components of the specified model also suggests the aforementioned, perceived visual statement. In fact, the linear regression function has the following form: y = -19.75 + 1.203 * X, with statistics of R 2 = 0.434 and R = 0.659. The value of the coefficient of determination indicates that only 43.4% of the variation of the Innovation Output Sub-Index variable is explained by variations of the Innovation Input Sub-Index variable, whereas the remaining 56.6% is the result of the influence of other factors not included in this model. A weak correlation is confirmed by the correlation coefficient of 0.659. Its value indicates the existence of a low-grade, direct (straight line extending from the lower left to the upper right corner of the graph) linear correlation between the observed variables in the countries included in the sample. The slope of the line (b1 = 1.203) indicates that an increase of the Innovation Input Sub-Index by one unit leads to an increase in the Innovation Output Sub-Index by 1.203 (corresponding to the units of measurement used to express the Innovation Output Sub-Index variable). Testing the hypothesis of linear interdependence of variables through the appropriate regression coefficient leads to the value of the test statistics of 1.752. With the probability of the test significance level of 0.05 and the test threshold of 2.7764, it could also be concluded that there is no statistically significant linear correlation between the Innovation Input Sub-Index variable and the Innovation Output Sub-Index variable.

Figure 2: Scatter diagram for the Innovation Input Sub-Index and the Innovation Output Sub-Index for the selected group of EU countries



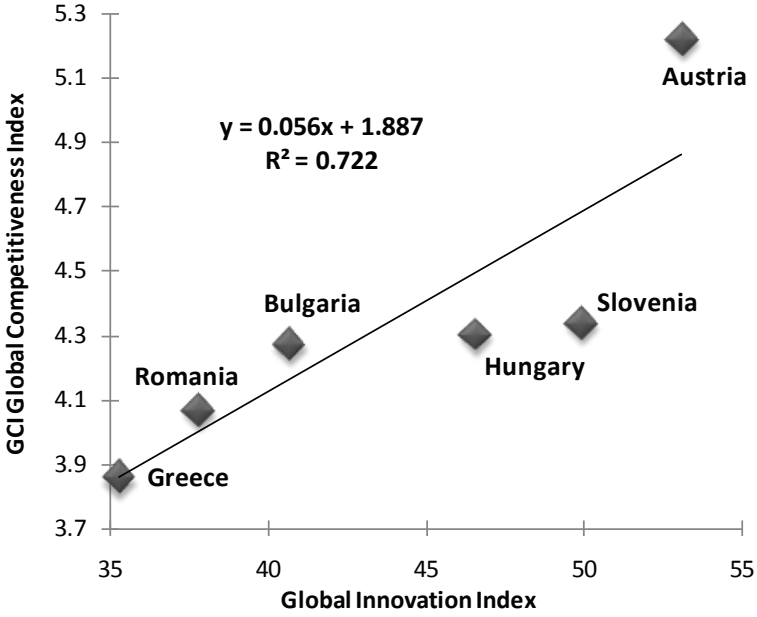
A graphical representation of data pairs of the variables, the Innovation Input Sub-Index and the Innovation Output Sub-Index, for the six EU countries shows a very strong correlation between the variations of the observed variables (Figure 2). Customising the linear form of interdependence and analysis behind the components of the specified model also suggests the aforementioned, perceived visual statement. In fact, the linear regression function has the following form: y = - 21.68 + 1.208 * X, with statistics of R 2 = 0.819 and R = 0.905. The value of the coefficient of determination indicates that 81.9% of the Innovation Output Sub-Index variable variation is explained by the variation of the Innovation Input Sub-Index variable, whereas the remaining 8.1% is primarily the result of the impact of other factors not included in this model. A very strong correlation is confirmed by the correlation coefficient of 0.905. Its value suggests the existence of a very strong, direct (straight line extending from the lower left to the upper right corner of the graph) linear correlation between the observed variables in the countries included in the sample. The slope of the line (b1 = 1.208) indicates that an increase in the Innovation Input Sub-Index by one unit for their actions leads to an increase in the Innovation Output Sub-Index by 1.208 (corresponding to the units of measurement used to express the variable Innovation Output Sub-Index). Testing the hypothesis of linear interdependence of variables through the appropriate regression coefficient leads to the value of the test statistics of 4.266. With the probability of the test significance level of 0.05 and the test threshold of 2.7764, it could also be concluded that there is a statistically significant linear correlation between the Innovation Input Sub-Index variable and the Innovation Output Sub-Index variable.

Figure 3: Scatter diagram for the Global Innovation Index and the Global Competitiveness Index for the Western Balkans



A graphical representation of data pairs of the variables, the Global Innovation Index and the Global Competitiveness Index, for the selected countries shows a very weak correlation between the variations of the observed variables (Figure 3). Customising the linear form of interdependence and analysis of components for the specified model also suggests the aforementioned, perceived visual statement. In fact, the linear regression function has the following form: y = 3.558 + 0.011 * X, with statistics of R2 = 0.217 and R = 0.466. The value of the coefficient of determination indicates that only 21.7% of the variation of the Global Competitiveness Index variable is explained by the variations in the Global Innovation Index, whereas the remaining 78.3% is the result of the influence of other factors not included in this model. A weak correlation is confirmed by the correlation coefficient of 0.466. Its value indicates the existence of a low-grade, direct (straight line extending from the lower left to the upper right corner of the graph) linear correlation between the observed variables in the countries included in the sample. The slope of the line (b1 = 0.011) indicates that an increase in the Global Innovation Index by one unit leads to an increase in the Global Competitiveness Index by 0.011 (corresponding to the units of measurement used to express the Global Competitiveness Index variable). Testing the hypothesis of linear interdependence of variables through the corresponding regression coefficient leads to the value of the test statistics of 1.0309. With the probability of the test significance level of 0.05 and the test threshold of 2.7764, it could also be concluded that there is no statistically significant linear correlation between the Global Innovation Index variable and the Global Competitiveness Index variable.

Figure 4: Scatter diagram for the Global Innovation Index and the Global Competitiveness Index for the selected EU countries



A graphical representation of data pairs of the variables, the Global Innovation Index and the Global Competitiveness Index, for the selected EU countries shows a strong correlation between the variations of the observed variables (Figure 4). Customising the linear form of interdependence and analysis of components of the specified model also suggests the aforementioned, perceived visual statement. In fact, the linear regression function has the following form: y = 1.887 + 0.056 * X, with statistics of R2 = 0.722 and R = 0.849. The value of the coefficient of determination indicates that 72.2% of the variation of the Global Competitiveness Index variable is explained by the variations in the Global Innovation Index, whereas the remaining 27.8% is the result of the influence of other factors not included in this model. A strong correlation is confirmed by the correlation coefficient of 0.849. Its value indicates the existence of a strong, direct (straight line extending from the lower left to the upper right corner of the graph) linear correlation between the observed variables in the countries included in the sample. The slope of the line (b1 = 0.056) indicates that an increase in the Global Innovation Index by one unit in their actions leads to an increase in the Global Competitiveness Index by 0.056 (corresponding to the units of measurement used to express the the Global Competitiveness Index variable). Testing the hypothesis of linear interdependence of variables through the appropriate regression coefficient leads to the value of the test statistics of 3.237. With the probability of the test significance level of 0.05 and the test threshold of 2.7764, it could also be concluded that there is a statistically significant linear correlation between the Global Innovation Index variable and the Global Competitiveness Index variable.

5 Conclusion

In considering the relationship between the Innovation Input Sub-Index and the Innovation Output Sub-Index at the level of the Balkans countries, we have found that there is no statistically significant effect (linear correlation) of the Innovation Input Sub-Index on the Innovation Output Sub-Index. At the same time, in considering the relationship of these variables to the reference level of the European countries, we have revealed a very strong, direct linear correlation and a statistically significant impact (linear correlation) of the Innovation Input Sub-Index on the Innovation Output Sub-Index. Substantial correlation between innovation inputs and innovation outputs of the selected EU countries assumes the existence of managed national innovation systems. In contrast, the Western Balkans countries do not show a significant correlation between innovation inputs and outputs, which implies the absence of a strategic approach to the development and management of the national innovation system, as a prerequisite for the engagement and improvement of the level of the national innovation potential of these countries.

In considering the relationship between the Global Innovation Index and the GCI in the Western Balkans, we have established that there is no statistically significant effect (linear correlation) of the Global Innovation Index on the Global Competitiveness Index. At the same time, in considering the relationship of these variables at the level of the EU countries that delimit the Western Balkans region, we have revealed a strong, direct linear correlation and a statistically significant impact (linear correlation) of the Global Innovation Index on the Global Competitiveness Index. The detected significant correlation between the Global Innovation Index and the GCI in the selected EU countries leads to the assumption that the competitiveness of these countries relies heavily on the use of their innovation potential. In contrast, absence of the significant correlation between the Global Innovation Index and the Global Competitiveness Index in the Western Balkans countries indicates that in their struggle for global competitiveness, these countries do not rely on their innovation potential, which is normally low.

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Inovativnost in konkurenčnost v izbranih evropskih državah v letu 2012

Tema tega prispevka je predstavitev gospodarskih inovacij in konkurenčnosti v enajstih evropskih državah v letu 2012. Izbrane države so razdeljene v dve skupini. Prvo skupino sestavlja šest držav Zahodnega Balkana (Albanija, Bosna in Hercegovina, Makedonija, Srbija, Hrvaška in Črna gora), drugo pa pet bližnjih držav EU (Bolgarija, Grčija, Madžarska, Romunija in Slovenija). Z uporabo regresijske analize

smo, na podlagi podatkov iz Poročila o globalnem indeksu inovacij za leto 2012, želeli ugotoviti povezavo med vnosom inovacij in učinkom le-teh v izbranih evropskih državah in najti sprejemljiv odgovor na vprašanje, kako količina vnosa inovacij določa vrednost inovacij v proizvodnji na Zahodnem Balkanu na eni strani in v izbranih bližnjih državah EU na drugi strani.

Tudi na podlagi informacij, ki jih vsebuje poročilo o globalnem indeksu inovacij za leto 2012 in podatkov iz poročila Svetovnega gospodarskega foruma o globalnem indeksu konkurenčnosti 2012-2013, smo iskali povezavo med inovativnostjo in konkurenčnostjo v teh državah v letu 2012.

Odgovor na vprašanje o obstoju soodvisnosti med vnosom inovacij in inovacijskimi učinki v gospodarstvu smo dobili s pomočjo statistične analize, znane kot graf XY. To je običajen način, da se pokažejo odnosi (smer in stopnja kvantitativne skladnosti variant) med dvema spremenljivkama. Odvisno od odgovora na to vprašanje se lahko oblikovalcem politike inovacij posredujejo koristne informacije (ki so vse pomembnejši element v upravljanju z razvojem), v kateri smeri je najbolj smotrno delovati s spodbudami in drugimi vladnimi ukrepi za izboljšanje inovativnosti v državi.

Konkurenčnost države je teoretično sporen pojav. Poleg tega nekateri raziskovalci izrecno opozarjajo, da količinsko vrednotenje konkurenčnosti države ni posebno zanimiva gospodarska tema (Schuller in Lidbo, 2009). Druga skupina gospodarskih analitikov trdi, da morajo biti konkurenčna podjetja in ne država. To izhaja iz prepričanja, da bodo podjetja propadla, če ne morejo med seboj tekmovati (Krugman, 2004). Dejstvo pa je, da je konkurenčnost države kot celote pogosteje prisotna v teoretičnih in tudi v empiričnih raziskavah (Fagerberg, 1988).

Svetovni gospodarski forum definira konkurenčnost kot skupek institucij, politik in dejavnikov, ki določajo raven produktivnosti v državi. Dosežena produktivnost določa trajnostno raven blaginje, ki jo lahko doseže gospodarstvo in jo ohranja skozi daljše časovno obdobje (Schwab, 2009). Identifikacija konkurenčnosti države z njeno sposobnostjo za izvoz blaga in storitev na tuje trge je preozek pristop in ne ustreza sodobnim gospodarskim razmeram. Razlaga konkurenčnosti države kot priložnosti za povečanje bogastva na koncu privede do produktivnosti, saj večji nacionalni dohodek pomeni višjo produktivnost dela.

Koncept konkurenčnosti države je trdno zasidran v gospodarski in razvojni politiki. Zato je analiza dejavnikov konkurenčnosti države pomembna razsežnost razvojne politike, ki je večinoma posvečena iskanju rešitev za izboljšanje kakovosti ključne makroekonomske uspešnosti. Čeprav je očitno, da je konkurenčnost države v bistvu povezana z njeno gospodarsko uspešnostjo, je dejstvo, da ta kompleks bolj dojemamo glede na relativni položaj države do drugih držav in veliko manj glede na njeno nakopičeno bogastvo.

Ni splošno sprejete metodologije za vrednotenje konkurenčnosti države. V praksi obstaja več pristopov za njeno merjenje, med katerimi pomensko izstopa indeks globalne konkurenčnosti, ki ga je razvil Svetovni gospodarski forum. Model deluje z več kot 150 spremenljivkami, razvrščenimi v dvanajst stolpcev. Poročilo o globalni konku-

renčnosti 2012-2013 vsebuje podatke za 144 držav. Dejavniki, ki vplivajo na produktivnost in konkurenčnost države, so po indeksu globalne konkurenčnosti razporejeni v dvanajstih stolpcih, in sicer: institucije, infrastruktura, makroekonomska stabilnost, zdravje in osnovnošolsko izobraževanje, visokošolsko izobraževanje in usposabljanje, učinkovitost blagovnega trga, učinkovitost trga dela, razvoj finančnih trgov, tehnološka pripravljenost, velikost trga, poslovna prefinjenost in inovativnost.

Vsak izmed teh stolpcev vpliva na konkurenčnost gospodarstva neodvisno, pa tudi v interakciji z drugimi. Dejavniki se vrednotijo s pomočjo t. i. »trdih podatkov« (stopnja inflacije, število uporabnikov interneta, pričakovana življenjska doba itd.) in t. i. »mehkih podatkov« (rezultat mnenjske ankete vodilnih menedžerjev, ki jo vsako leto izvedejo na Svetovnem gospodarskem forumu, kjer se trenutno stanje pomembnih družbenih in gospodarskih pojavov, kot so korupcija in zaupanje v institucije sistema, količinsko vrednoti od 1 do 7).

Pomen nekaterih dejavnikov konkurenčnosti je odvisen od stopnje gospodarskega razvoja, na kateri se država nahaja. Za državo, ki je v začetnih fazah razvoja (na dejavnikih temelječe gospodarstvo), so odločilni dejavniki konkurenčnosti, npr. institucije, infrastruktura, makroekonomska stabilnost, zdravje prebivalstva, osnovnošolsko izobraževanje. Za bolj zrelo fazo razvoja pa so postali pomembni za konkurenčnost države dejavniki, kot so fakultetno izobraževanje in usposabljanje, učinkovitost trga blaga, učinkovitost trga dela, razvitost finančnega trga, poznavanje in uporaba tehnologije ter velikost trga. Nazadnje, v tretji fazi konkurenčnosti so za gospodarski razvoj najpomembnejše inovacije. Glede na fazo, v kateri se nahaja gospodarstvo določene države, so bili dejavniki razdeljeni v tri skupine in imajo različno težo pri izračunu indeksa globalne konkurenčnosti.

Glede na fazo, v kateri se nahajajo posamezna gospodarstva, se večja vrednost pripisuje dejavnikom, ki so v tej fazi razvoja najbolj pomembni. Za izračun indeksa globalne konkurenčnosti, so države razdeljene v faze razvoja po velikosti bruto domačega proizvoda na prebivalca v ameriških dolarjih.

V sodobnih pogojih gospodarjenja rast konkurenčnosti temelji predvsem na inovativnosti in znanju. Inovativnost se nanaša na sposobnost gospodarstva, podjetij ali posameznikov, da nove poslovne ideje preoblikujejo v nove proizvode, storitve, tehnologije, trge. Glavni smisel inovativnosti je, da so novi izdelki in storitve učinkovitejši kot prejšnji.

Izboljšanje inovativnosti vključuje pomembno in ustrezno javno podporo. Medtem ko je bila v preteklosti podpora inovativnosti v glavnem osredotočena na naložbe v raziskave in razvoj, je v današnjih razmerah veliko bolj zapletena. Pozorni so na številne dejavnike, ki vplivajo na izboljšanje produktivnosti in na podlagi katerih je zaznana jasna politika podpore inovativnim prizadevanjem podjetij in posameznikov.

Potreba po merjenju inovativnosti gospodarstva se je okrepila v zadnjih dvajsetih letih, vzporedno z nastankom sistema svetovnega gospodarstva, ki ga pretežno oblikujejo proces globalizacije in veliki dosežki na področju informacijskih in komunikacijskih tehnologij. To je razumljivo, če upoštevamo dejstvo, da inovativnost v gospodar-

stvu ni samo ključni spodbujevalec gospodarske rasti in izboljšanja konkurenčnosti držav, ampak je bistveno, da spodbudi tudi družbeni razvoj ter izboljša kakovost življenja in globalnega okolja.

Inovacije v gospodarstvu se najpogosteje izražajo s t. i. kompozitnimi indeksi. Ti so skupni posameznim kazalnikom in izražajo njihovo relativno pomembnost. Vse bolj se spoštujejo kot uporabna orodja v ekonomskih raziskavah. Njihova glavna značilnost se kaže v sposobnosti kvantifikacije zapletenih pojavov, zahvaljujoč poenostavljanju informacij, da bi jih bolje razumeli odločevalci in javnost (Cvetanovich in Novaković, 2014).

Še posebej se je izkazala kot koristna uporaba kompozitnih indeksov v primerjalnih raziskavah o inovativnih zmogljivostih posameznih držav. To je predvsem zaradi njihove sposobnosti, da opišejo kompleksne koncepte na preprost način, ki se lahko uporablja kot merilo uspešnosti. Vendar pa kompozitni indeksi lahko prikažejo nepravilne podatke, če so slabo zasnovani ali napačno interpretirani. Kljub temu pa v zadnjih letih njihova uporaba hitro raste.

Ko je spoznala, kako pomembno vlogo imajo inovacije za gospodarski razvoj posameznih držav oz. ko je spoznala pomen inovacij za gospodarski napredek posameznih držav, je Konfederacija indijske industrije, skupaj s Poslovno šolo za svet INSEAD in Canon Indija, ustvarila globalni indeks inovacij, katerega glavni cilj je poudariti doseženo raven inovacij v posameznih državah.

Globalni indeks inovacij je sestavljen iz dveh podindeksov: vnosnega in izhodnega indeksa inovacij. Vsakega sestavljajo stolpci. Vhodne podatke predstavlja pet stolpcev, ki prikazujejo elemente oz. potencial za inovativne dejavnosti nacionalnega gospodarstva: (1) institucije, (2), človeški kapital in raziskave, (3) infrastruktura (4) tržna izpopolnjenost in (5) poslovna izbranost. Inovacijski izhodi so sestavljeni iz dveh stolpcev, ki prikazujejo dejanske rezultate inovacij: (1) znanstvena spoznanja in (2) ustvarjalni izhodi. Čeprav ta indeks zajema le dva stolpca, ima enak pomen pri izračunu globalnega indeksa inovativnosti, kot ga ima podindeks inovacijskih vložkov.

Vsak stolpec je razdeljen podstolpce, ki tudi predstavljajo skupke številnih kazalnikov. Vhodni parametri določajo ustrezno okolje za ustvarjalnost in uporabo inovacij v gospodarstvu. Izhodi so dokaz rezultatov inovacijskih vložkov (patenti, blagovne znamke, avtorske pravice, kreativni izdelki, zaposleni na področju storitev, ki temeljijo na znanju, delež izvoza visokotehnoloških proizvodov v celotnem izvozu itd.).

Čeprav so rezultati vseh dvanajstih stolpcev prikazani ločeno, je treba vedeti, da niso neodvisni. Nasprotno, prekrivajo se, in šibkost na enem področju ponavadi negativno vpliva na druga področja. Težko je npr. doseči zadovoljivo stopnjo inovativnosti (stolpec dvanajst) brez zdrave, dobro izobražene in usposobljene delovne sile (stolpca štiri in pet), ki je pripravljena sprejeti nove tehnologije (stolpec devet) in brez učinkovitega trga blaga, ki omogoča spraviti inovacije nanj (stolpec šest). Čeprav so stolpci povzeti v en indeks, so podatki prikazani za vsakega od dvanajstih stolpcev posamično, saj to omogoča vpogled v specifična področja, ki jih mora država izboljšati.

Raziskovanje povezav med indeksom vhodnih inovacij in indeksom inovativnih rezultatov šestih držav Zahodnega Balkana v letu 2012 ni pokazala statistično značilne soodvisnosti. Nasprotno, na primeru petih držav Evropske unije pa je ugotovljena statistično značilna korelacija med indeksom vhodnih inovacij in indeksom inovativnih rezultatov. To potrjuje, da je v izbranih državah EU učinkovitejše upravljanje z nacionalnimi inovacijskimi sistemi. Dobljeni rezultati sicer govorijo o slabi učinkovitosti transformacije uporabljenih inovacijskih virov v konkretne inovacijske rezultate.

Raziskovanje povezave med globalnim indeksom inovativnosti in globalnim indeksom konkurenčnosti v šestih državah Zahodnega Balkana v letu 2012 ni pokazalo statistično značilne soodvisnosti. To pomeni, da države Zahodnega Balkana ne izkoristijo v celoti svojega inovacijskega potenciala za izboljšanje konkurenčnosti na svetovnem tržišču. Nasprotno, na primeru petih držav Evropske unije je ugotovljena statistično značilna korelacija med globalnim indeksom inovativnosti in globalnim indeksom konkurenčnosti, kar na določen način govori o inovativnosti kot dejavniku, ki odloča o konkurenčnosti izbranih držav EU v letu 2012.

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