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IMPACT OF EXPENDITURES FOR EDUCATION ON THE COMPETITIVENESS OF THE ECONOMY

УТИЦАЈ РАСХОДА ЗА ОБРАЗОВАЊЕ НА КОНКУРЕНТНОСТ ПРИВРЕДЕ

Summary: *Modern trends in society lead to the conclusion that the development of a country can not be based on a numerical increase in human resources, but only on raise of the creative and production quality of these resources, which is the exclusive task of the educational system. According to the indicators of investment in the development of the educational system, the Republic of Serbia is below the EU average. For this reason, one of the conditions that the Republic of Serbia needs to meet on its path towards the European Union is to achieve the European average spending on higher education.*

The subject of the research presented in this paper are the expenditures on education and competitivness of the economy in the Republic of Serbia and neighboring countries. Since the quality of education is one of the elements of economy competitiveness, it will be also analyzed in the paper. The aim of the paper is to examine the relation between expenditures on education, quality of education and competitiveness in the Republic of Serbia and neighboring countries. Appropriate statistical techniques will be used in order to analyse relation directions and forms between observed indicators. Data from the National Bank of Serbia, Eurostat and World Economic Forum reports will serve as an information basis for the analyses.

Keywords: *knowledge, expenditure for education, Global Competitiveness Index*

JEL classification*: H52, I25*

Резиме: *Савремени трендови у друштву доводе до закључка да се развој земље не може заснивати на квантитативном порасту људског капитала, већ искључиво на порасту квалитета креативности и продуктивности овог ресурса, што је ексклузиван задатак образовног система. Према показатељима улагања у развој образовног система, Република Србија је испод просека ЕУ. Из тог разлога, један од услова које Република Србија треба да испуни на свом путу ка Европској унији, јесте да се постигне просечан ниво потрошње за високо образовање, који остварују ове земље.*

Предмет истраживања овога рада јесу трошкови образовања и конкурентности привреде у Републици Србији и суседним земљама. Имајући у виду чињеницу да је квалитет образовања један од елемената економске конкурентности – то ће, такође, бити анализирано и у овом раду. Циљ рада је испитати однос расхода за образовање, квалитет образовања и конкурентност у Републици Србији и суседним земљама. Одговарајуће статистичке технике користићемо како бисмо анализирали тенденције и односе између посматраних индикатора. Подаци из извештаја Народне банке Србије, Еуростата и Светског економског форума служиће као основа за анализу.

Кључне ријечи: *знање, расходи за образовање, индекс глобалне конкурентности*

JEL класификација: *H52, I25*

1. INTRODUCTION

The role of knowledge has changed over time. At the beginning only rich people were educated. During the Middle Ages, the church attached great importance to knowledge, but real revolution in the development of knowledge started with the industrial revolution. Trends in investment in human capital and knowledge lead to a revision of economic theory and models. In the past knowledge was an external factor, but now it is seen as a significant determinant of production. In the past general knowledge has dominated, whereas now specialist knowledge is sought.

Modern state allocated significant funds from the budget for education purpose. Given that developed countries have substantial budgets, they are in a situation to set aside large funds for education. Due to large investments in education, developed countries achieved the best results in research and development.

Improvement of human resources is the key for increasing productivity, and the most important prerequisite for achieving this goal is quality education. The large difference between the income of people with university and secondary school graduates, can be reduced if we increase the quality of education, and if the education is available to all citizens.

Objective of this study is to determine whether the expenditure of education is influencing the rate of GDP growth in analyzed countries. Also, we want to measure what kind of impact exists.

2. THEORETICAL BACKGROUND

Contemporary trends in the market economy countries show that education and investment in human resources are among the priorities of the national strategies and policies of social, economic and technological progress. Investment in education, i.e. in the providing of adequate human capital, that knows how to adapt to changing circumstances, which gets a character of investment. Education policy is not only a policy of creating of human capital, but it's also a part of the overall development policy of a society (Đurović-Todorović and Đorđević 2010).

The state plays an important role in the field of education. It is so dominant that it is discussed usually as something that goes without saying. In some countries, though the country is able to provide resources for educational institutions, most of the education is offered by private schools, especially those belonging to the church.

However, on the basis of numerous analyzes it can be concluded that public expenditure for education far exceedes expenditure of the private sector for this purpose.

Significant differences between education and the other goods is most clearly observed by the fact that the increase of expenditures does not necessarily lead to better results. In the production of standard goods, increase of costs leads to increased production, but it does not necessarily mean that the increase in expenditures of education would achieve better results of students. This is because the increase in expenditure does not have a direct impact on education, but can rather be caused by an increase in administrative costs.

That knowledge is paid great attention to can be seen from the fact that a significant component of the Global Competitiveness Index, which contains twelve parameters of competition, includes education. Specifically, several parameters are associated with education, research and science. These are: health and primary education, higher education and training, labor market efficiency, technological readiness, business efficiency and innovation. Six of the twelve parameters directly or indirectly points to the great importance of investment in education, research and science and technology improvement, because such investment affects the improvement of productivity and efficiency, the innovation, and hence competitiveness.

The acceleration of technological changes in recent decades, and global trends towards the knowledge-based economy probably make that human capital will continue to be a strategic factor of production, and hence alternative attractive investment, even in the distant future (Angel De la Fuente 2002).

The importance of education for economic development was first spotted by Adam Smith. He represented the idea of specialization of labor. Adolph Wagner was probably the first economist to recognize the positive correlation between economic growth and the growth of government activity (Tomić, Z, Analysis of the Impact of Public Education Expenditure on Economic Growth of European Union and BRICS, Economic Analysis (2015, 19-38).

A lot of empirical studies have attempted to examine the relationship between human capital investment and economic growth. Sayantan Ghosh Dastidar, Sushil Mohan and Monojit Chatterji (2013) present that relationship is tested in countries such as the United States, Pakistan, Tanzania and Zambia, Nigeria and India and that results from these papers suggest that expenditure on education affects economy growth positively. Distidar, Mohan and Chatterji (2013) found in India that investing in education is a necessary but not a significant condition for achieving economic growth. Other factors have a significant impact on economic growth in addition to education. Oluwatobi Stephen and Ogunrinola Oluranti (2011) for Nigeria found that there is a positive relationship between the growth

of expenditures for education and economic growth using an expanded model of economic reproduction, where they add to the analysis impact of costs of education and health care. Dipendra Sinha (1998) found in Malaysia that there is a long-term relationship between the cost of education and economic growth, but that there is no mutual relationship between the increase in the cost of education and economic growth. Avina Sabah Idrees and Muhammad Wasif Siddiqi (2013) based on panel analysis found that there is a positive relationship between the rising cost of education and economic growth, and there is the effect of reaching the developed economies based on the investment in education. In their analysis they observed countries UK, USA, Canada, Germany, France, Italy and Japan, on the one hand, and Pakistan, India, China, Turkey, Russia, Poland and South Africa, on the other hand. Abhijeet Chandra (2010) found that India's boom in software industry experienced probably due to the huge investments in the 1950s and 1960s 22 Economic Analysis (2015, 19-38) in education, particularly in technical sciences. There are also works like Nurudeen Usman and Belgrave and Craigvell, who found that the impact of education expenditures on growth is negative. In addition to studying the impact of the increase in public expenditure of education to economic growth, there are works such as Michel Beine et.al. (2001) dealing with the problem of brain drain and its impact on economic growth. This is one of the big problems for the growth of the economy of countries like Serbia (Tomić 2015, 22).

3. DATA ANALYSIS AND DISCUSSION

Expenditure on education is the most important item in the expenditure of modern states. In modern states education expenditures are among the public expenditures, which are very significant in their scope. In most countries, there is increasingly accepted view that overall socio-political and economic development of the country depends on the level of education of the population and adequate qualification structure of employees. It can be said that the quality of education is one of the most important factors of economic success of the country and in this regard there is full global consensus. At the same time, most of the country is dissatisfied with the state of their school system and they are trying to find answers to new challenges.

The positive impact of education on economic growth is empirically firmly confirmed by the fact that countries with more educated population, under other circumstances, achieve faster growth of the economy. To ensure widely accessible and quality education, it is necessary to allocate adequate resources, effective regulation and competitive environment.

The situation in Serbia in the field of education, based on various researches, is unsatisfactory: the quality of education at all levels is relatively low, while the coverage of population by secondary and higher education is low. This requires reform of education whose objectives should be how to increase the coverage of the population by secondary and higher education, and increase the quality of education.

Public expenditures on education in Serbia amount to around 4-4.5% of GDP, which is about the average of countries in the region and a little less than in developed European countries. Average share of expenditures for education in the EU countries amounts to 5.34% of GDP.

The subject in this paper is the expenditure for education in Serbia and surrounding countries. The aim of the paper is to examine the interdependence between expenditures for education and quality of education and, also, economy competitiveness in the Republic of Serbia and neighboring countries.

The key hypothesis is that there is impact of expenditure on education (their share in GDP), on education quality and, therefore, on economy competitiveness. In order to test defined hypothesis, data from the National Bank of Serbia, International Monetary Fond, Eurostat and World Economic Forum reports will be used.

Appropriate statistical techniques, named correlation analysis and regression analysis, will be used in order to test compilance between expenditure on education and economy competitiveness.

Data about share of expenditure on education in GDP for 2013 (the last available data for expenditures) in neigboring countries (Macedonia, Bulgaria, Bosnia and Herzegovina, Montenegro, Croatia, Slovenia, Hungary, Romania) are obtained from International Monetary Fond, World Bank and Eurostat database. Data about expenditure on education in Serbia are obtained from the National Bank of Serbia.

As an indicator of education quality the fifth pilar of the Global Competitiveness Index (GCI), named *High education and training*, was selected. The value of this indicator ranges from 1(the lowest level) to 7(the highest level). This indicator consists of two sub-indicators:
- *Secondary education enrollment rate* - ratio of total secondary enrollment, regardless of age, to the population of the age group that officially corresponds to the secondary education level.
- *Tertiary education enrollment rate* – ratio of total tertiary enrollment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education, whether or not leading to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

In the following table data about expenditure on education (share of GDP), GDP *per capita*, high education and training score and Global Competitiveness Index in 2013 are presented.

Table 1. Comparative preview of expenditures for education, GDP per capita and quality of education in selected countries

Country	Expenditure on education (% of GDP)	GDP *per capita* (US dollars)	High education and training score	Global Competitiveness Index
Bulgaria	4.27	7,685.19	4.5	4.31
Bosnia and Herzegovina	5.60	4,681.92	-	4.02
Croatia	4.20	13,568.95	4.7	4.13
Hungary	4.13	23,806.06	4.7	4.25
Macedonia FYR	4.60	5,239.72	4.3	4.14
Montenegro	4.40	7,189.15	4.7	4.20
Romania	3.80	9,568.36	4.6	4.13
Slovenia	5.22	23,164.11	5.3	4.25
Serbia	4.40	6,351.68	4.3	3.77

Source: IMF, Eurostat, World Economic Forum

According to data about expenditure for education share in GDP, the highest value has been recorded in Bosnia and Herzegovina (5.60). This value is near to the EU average. The lowest share of expenditure for education within observed countries has Romania (3.80%).

Table 2. Correlation coefficients

Variable		Expenditures on education (% of GDP)	GDP *per capita* (US dollars)	High education and training score	Global Competitiveness Index
Expenditures on education (% of GDP)	Correlation Coefficient	1.000	-0.577	-0.006	-0.143
	Sig. (2-tailed)	.	0.104	0.988	0.713
GDP *per capita* (US dollars)	Correlation Coefficient	-0.577	1.000	0.798[*]	0.538
	Sig. (2-tailed)	.104	.	0.018	0.135
High education and training score	Correlation Coefficient	-0.006	0.798[*]	1.000	0.385
	Sig. (2-tailed)	0.988	0.018	.	0.346
Global Competitiveness Index	Correlation Coefficient	-0.143	0.538	0.385	1.000
	Sig. (2-tailed)	0.713	0.135	0.346	.

Source: Authors' calculation

The value of Spearman's rho correlation coefficient (Table 2) leads to conclusion that there is negative correlation between GDP per capita and expenditures on education (% of GDP). This correlation is moderate, and it is not statistically significant (sig. 0,104). There is a high degree of agreement (0.798) between GDP per capita and high education and training score, which is also statistically significant (0,018). According to this result, it is possible to conclude that high level of development includes the high quality of education and vice versa. Correlation between Expenditures on education (% of GDP) and High education and training score is negative according to value of Spearman's rho coefficient, but negligible (-0,006). This value indicates that in these countries there is no coherence between expenditures for education and the quality of education. Interdependence between Expenditures on education and Global Competitiveness Index is also negative (-0.143), but higher compared to High education and training score. Bearing in mind fact that High education and training score is the component of the Global Competitiveness Index, direct correlation between those two variables (0.385) is expected.

Two regression models have been estimated in order to test the key hypothesis in the paper, i.e. the impact of expenditures on education on the economy competitiveness. The first regression model examines the influence of expenditure on education on the quality of education in the analyzed countries. Estimated value of the regression coefficients are shown in the following table.

Table 3. Estimated regression coefficients in Model 1*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Constant	2.859	1.160		2.464	0.049
Expenditures on education (% of GDP)	0.406	0.264	0.532	1.539	0.175

*Dependent variable: High education and training score
Source: Authors' calculation

Estimated values of the regression coefficients shown in Table 3 can be expressed in the following form:

High education and training score = 2.859 + 0.406·Expenditures on education (% of GDP)

Based on the estimated regression model it can be noticed that in the analyzed countries there is a positive effect of Expenditures on education in the quality of education. Estimated value of the slope coefficient is 0.406, which may be interpreted in the sense that an increase in the Expenditures on education share by 1% causes an average increase of High education and training score to 0.406. Representativeness measure of the estimated model, shown through the determination coefficient (0.283) shows that, in the analyzed countries, 28.3% of the variation in high education and training score can be explained by variations in Expenditures on education.

Table 3. Estimated regression coefficients in Model 2*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	2.921	0.863		3.386	0.015
High education and training score	0.264	0.186	0.503	1.424	0.204

*Dependent variable: Global Competitiveness Index
Source: Authors' calculation

Dependency between education quality and competitiveness of the economy in the analyzed countries has been expressed in the second regression model. More specifically, form of functional relation between High education and training score and the Global Competitiveness Index has been determined. Estimated value of the regression coefficients in this model is shown in the table 3.
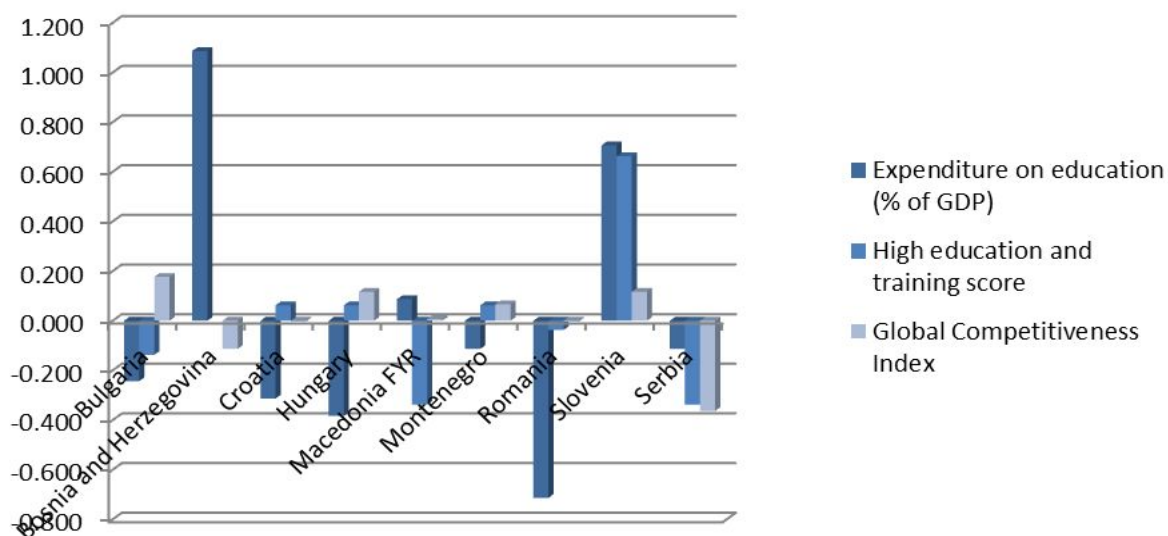
The estimated model can be presented in a following way:

Global Competitiveness Index = 2.921+ 0.264· High education and training score

According to the estimated regression model it can be concluded that in the analyzed countries there is a positive impact of *High education and training score* in *Global Competitiveness Index*. Estimated value of the slope coefficient is 0.264, which may be interpreted in the sense that an increase in the *High education and training score* by 1 point causes an average increase of *Global Competitiveness Index* to 0.264. Of course, this explanation is valid only for countries covered by the analysis, because estimated value of the slope coefficient is not statistically significant. Representativeness measure of the estimated model, shown through the determination coefficient (0.253) shows that, in the analyzed countries, 25.3% of the variation in Global Competitiveness Index can be explained by variations of High education and training score.

Public expenditure on education in Serbia is about the average of countries in the region, and less than European countries average. Serbia also has a very small value of GDP *per capita*. According to the indicators of the quality of education and competitiveness Serbia is also at the bottom. Average value of High education and training score in observed countries amounts to 4.64, Score for High education and training in Serbia is 4,3, which is 7,3 percent below the average. Average value of the Global Competitiveness Index in the observed countries is 4.13. The Global Competitiveness Index for Serbia is 3.77, which is 8.7 percent below the average.

Figure 1. Deviations from the average values of selected indicators

Source: Authors' calculation according to Table 1

These results point to the bad situation of education in Serbia and the necessity of reforming this segment of the country's development. There are significant ways for improving efficiency at all levels of education.

4. CONCLUSION

There is general agreement that the highly qualified human resources make the largest and most significant potential and that they are potentially a development resource. The quality of students, workers, managers and researchers determines the innovation capacity of the country and represents

the basis for economic competitiveness and prosperity of society. Successful countries in XXI century are those whose citizens are creative, flexible and trained.

Trends in market economy have shown that education and human capital formation, when it comes to the development and application of new technologies, are among the priority targets of global national strategies and policies of social, economic and technological progress. Bearing in mind that the effects of education reflect not only on individuals but also on society as a whole, it can be concluded that knowledge becomes the main factor of development and competitiveness.

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