

HIGHLIGHTS

Highlight 1. How much does it pay off to invest in education in Serbia?

Nemanja Vuksanović¹

Introduction

According to the World Bank report (2014), when children, parents and governments consider the value of investing in education from various aspects, one should keep in mind that in addition to being a basic human right, investing in education results in significant economic benefits. One of such benefits is related to the fact that the educational level of an individual largely determines his future earnings. That is, it turns out that more educated individuals will earn more in the future. An indicator that allows measuring the benefits of education expressed in terms of higher future earnings is the rate of return on investment in education. Determining the value of the rate of return on investment in education in the last few decades, as a result of the increasing involvement of children in the schooling process, has become especially important because it provides insight into how much investment in education pays off. Measuring the rate of return on investment in education is particularly important in underdeveloped and developing countries, where a significant percentage of children are still out of school. In addition, in these countries, education is one of the most important forms of resources that individuals possess, as education contributes to improving the value of human capital embodied through a set of different knowledge and skills that an individual acquires during the schooling process. As a result of different levels of education achieved, individuals differ in the value of human capital they possess, which is then reflected in differences in earnings in the labor market. This is especially important in the case of children from poorer families, because education is almost the only mechanism that enables such children to move up the social ladder and overcome the problem of poverty. That is, education is an important tool that enables the reduction of income and property inequality in society. Education increases social mobility in the country, contributing to reducing differences in opportunities among individuals in society. Therefore, it is important for education policy makers, but also for children and their parents, to have an insight into the economic benefits of investing in education. A study by the International Labor Organization (ILO,

2019) indicates that an individual's level of education and his employment prospects are largely correlated, so that individuals who are more educated have a better chance of getting better jobs in terms of earnings and other important characteristics. This is especially true for countries with lower levels of development, where individuals with higher education are almost twice as likely to reach stable employment, which is characterized by extremely favorable conditions in terms of financial and non-financial benefits compared to individuals with primary education. This study also emphasizes the fact that it is of special importance to examine the ways in which the socio-economic characteristics of the family from which the child comes limit access to higher education. That is, it is important to determine the extent to which these benefits can be felt by children from poorer families.

Based on over a hundred studies conducted in the last half century in countries of different levels of development, it can be concluded that the rate of return on investment in education is positive and significant. Globally, the rate of return on investment in education is about 10% per year of schooling². This means that one additional year of schooling on average contributes to an increase in earnings by that percentage. However, significant differences in terms of the value of this rate can be observed depending on the level of development of the country, gender, educational level, etc. The highest rates were recorded in those regions of the world where access to the schooling process is still significantly limited for a significant number of children. For example, in the countries of the sub-Saharan Africa region, the rate of return on investment in education is up to 15% per year of schooling, while the rate is below 5% in the countries of the North American and Oceanian region. Also, rates of return on investment in education are higher for women than for men. Thus, observed at the global level, one additional year of schooling increases earnings of women by about 12%, and men by about 8%. Observed by educational level, rates of return on investment in education are highest in the case of higher education. In summary, based on the results of a number of studies, a pattern can be created according to which, worldwide, the rate of return on investment in primary education is just over 10%, then falls to about 7% in the case of secondary education and then rises to 15% in case of higher education. These differences are particularly pronounced in those countries where the share of the population with higher education is relatively low. Thus, individuals with higher education in the countries of

² It should be borne in mind that recent studies show a significantly lower value of this rate. In the developed countries of the world, according to the latest studies, one additional year of schooling contributes to an increase in earnings by about 3-5%. This decline is a result of the global expansion of education over the last few decades.

¹ Faculty of Economics University of Belgrade

the sub-Saharan Africa region earn over 30% more than those with primary education (Patrinos and Montenegro, 2014).

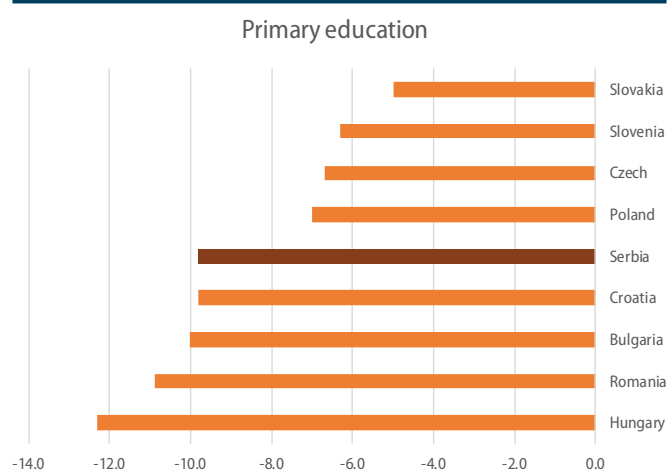
The subject of this Highlight is a comparative analysis of estimates of rates of return on investment in education in Serbia and selected countries of Central and Eastern Europe – CEE in the period from 2015 to 2019. The aim is to determine the extent to which there are differences in the estimated rates of return on investment in a particular level of education between Serbia and other CEE countries. This may be significant because there are some differences in the level of economic development among CEE countries, so it is expected that these differences will be reflected in the rate of return on investment in education. In addition to presenting estimates of rates of return on investment in education, differences and changes in the educational structure of CEE countries in the observed period will be presented. It should be borne in mind that the analysis is based on the number of years of schooling as a measure of the quantity of education, and does not take into account differences that may exist in terms of the quality of education. It is certain that the quality of one year of schooling in, for example, Serbia and Slovenia differs. However, the mentioned differences are not the subject of this Highlight.

Estimation of the rate of return on investment in education³

The assessment of the rate of return on investment in different levels of education was performed on the basis of data from the Labor Force Survey (LFS), for the period from 2015 to 2019. The rate of return for all levels of education is calculated as the difference in relation to the yield brought by secondary education. The results of the analysis indicate that the rate of return on investment in primary education in all CEE countries is negative, with significant differences among the countries of this region. As expected, a negative rate of return on investment in primary education indicates that low-educated individuals earn on average less than middle-educated individuals. In the case of Serbia, the person who has finished primary education as the highest level of education earns on average a salary that is about 10% lower than the salary earned by the person who has finished secondary education as the highest level of education. A similar negative rate of return on investment in primary education, compared to secondary, can be observed in the case of Croatia, Bulgaria and Romania. In Poland,

the Czech Republic, and Slovenia, the negative rate of return on investment in primary education is around -6.5%. The highest negative rate of return on investment in the lowest level of education is noticeable in Hungary, where on average the person who has reached the level of primary education as the highest level of education earns 12% less than the salary earned by a person with secondary education. The lowest negative rate of return on investment in primary education can be observed in Slovakia, where the person with the level of primary education as the highest level of education earns only 5% less on average compared to a person with secondary education. One of the factors influencing the differences in the rate of return between primary and secondary education is the institute of the minimum wage. The minimum wage greatly raises the value of earnings of those individuals who are low-educated, bringing their earnings closer to the earnings of middle-educated individuals. As a result, wage compression occurs in the lower parts of the wage distribution, which is reflected in a reduction of the difference between the rates of return of primary and secondary education. Thus, the institute of the minimum wage lowers the value of the negative rate of return on investment in the lowest level of education, compared to secondary education, so that in the absence of that institute, the wages of low-educated individuals would certainly be much lower. In addition, due to the expansion of education in all CEE countries, the largest share of the population are middle-educated individuals. As there are more and more such individuals in the educational structure of countries, the rate of return on investment in secondary education decreases. This may also explain to some extent why low-educated individuals earn only 5% to 12% less than middle-educated individuals in CEE countries.

Graph 1: Rate of return on investment in primary education in CEE countries (in%)



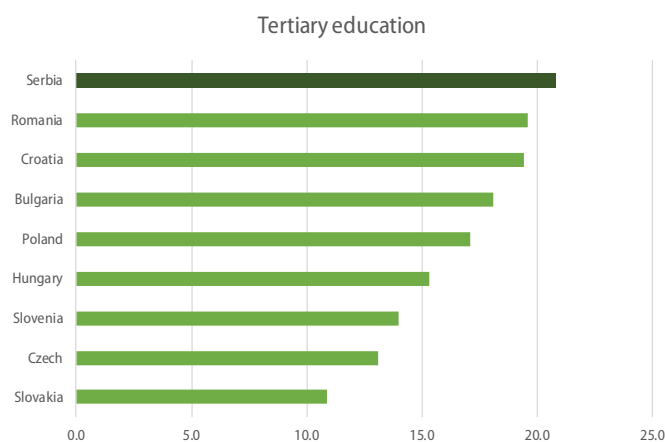
Note: see footnote 2 for evaluation details; the reference category is secondary education. Source: Author's calculation based on LFS data.

³ The results of the analysis are based on the assessment of the regression equation, in which the value of earnings depends on the level of education, but also on factors such as number of years of work experience, non-formal education, gender, marital status, location, and others. According to the level of education, individuals are classified into three groups: primary education, secondary education and higher education, and the population aged 20-64 is also included.

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According to the results of the analysis, the rate of return on investment in higher education in all CEE countries is positive, with some differences between the countries of this region as well as in the case of the premium on primary education. It is true that in the case of Serbia, the person who has finished higher education earns on average about 21% more than the salary earned by the person who has finished secondary education as the highest level of education. At the same time, it is the highest positive rate of return on investment in the highest level of education among the observed CEE countries. The lowest positive rate of return on investment in higher education can be observed in Slovakia, where the person with the highest level of higher education earns on average about 11% more than a person with secondary education. Thus, the rate of return on investment in higher education in Serbia is twice as high as the observed rate in Slovakia. A similar positive rate of return on investment in higher education of just under 20% can be seen in the case of Croatia and Romania. In Hungary, Poland and Bulgaria, the positive rate of return on investment in higher education is in the range of 15-18%, while in Slovenia and the Czech Republic the rate is around 14%.

Graph 2: Rate of return on investment in higher education in CEE countries (in%)



Note: see footnote 2 for evaluation details; the reference category is secondary education.
Source: Author's calculation based on LFS data.

If the previously presented rates of return on investment in primary and higher education are taken into account, the following can be concluded. In Serbia, a highly educated person earns about 30% more than a low-educated person. The same can be seen in Hungary, Bulgaria, Croatia and Romania, where individuals with the highest levels of higher education earn on average 28-30% more than individuals with the primary education as the highest level of education achieved. In all other CEE countries, these differences between individuals with higher and primary education are smaller. Thus, a highly educated person earns about 25% more in Poland and 15% more in Slovakia than low-educated person. These differences are primarily a reflection of different

educational structures, i.e. the ratio of the share of the population with higher and primary education.

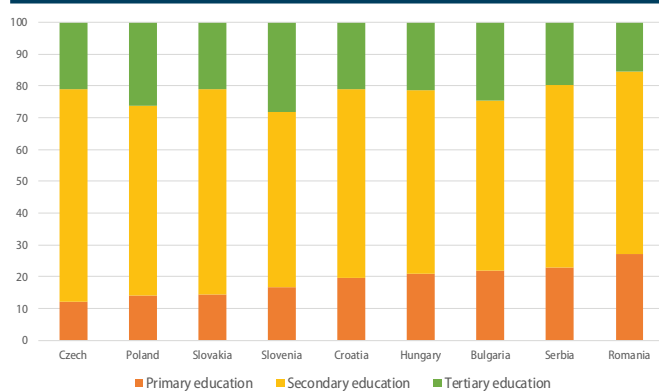
Differences and changes in the educational structure

Rates of return on investment in education are declining as the average number of years in schooling in the country grows. That is, with the increasing coverage of the population with a certain level of education, the rate of return on that level of education is decreasing. This reflects standard price movements due to changes in the supply-demand relationship. Specifically, as the supply of education in the country grows, the price (rate of return on investment in education) is lower. However, a number of studies have shown that rates of return on investment in education have declined moderately over time, despite a significant increase in the population coverage of education in all countries. This suggests that with the increase in the supply of education, there has been an increase in the demand for education. The increase in demand has occurred especially in the field of higher education, because due to technological advances, there is a noticeable increase in the demand of companies for specific knowledge and skills (Psacharopoulos and Patrinos, 2018).

Significant differences can be noticed among CEE countries in terms of the educational structure of the population, if we look at the period from 2015 to 2019. The share of the population with the primary education as the highest level of education in this period ranges on average from 10% in the Czech Republic to as much as 30% in Romania. So, the difference is as much as 20 percentage points between these two countries. In terms of the value of this share, the Czech Republic is close to Poland, Slovenia and Slovakia - where the value of this indicator is less than 20%, while Romania is close to Hungary, Bulgaria and Serbia - where the value of this indicator is higher than 20%. In Serbia, the share of the population with the primary education as the highest level of education in the observed period averages about 23%. The differences in the share of the population with the secondary education as the highest level of education are not so noticeable. The share of the population with the secondary education as the highest level of education ranges from about 55% in Bulgaria to 65% in the Czech Republic. In general, in most CEE countries, the average share of the population with the secondary education as the highest level of education is around 60% on average for the period. If the participation of the population with the higher education as the highest level of education is observed, significant differences can again be observed among CEE countries. For the analyzed period the value of this share is on average the lowest in Romania where

it is about 15%, and the highest in Slovenia where it is slightly less than 30%. Therefore, the share of the highly educated population in Slovenia is twice as high as in Romania. In Serbia, the share of the population that graduated from the university is slightly lower than 20%, which places Serbia together with Romania at the very bottom of CEE countries in terms of the participation of the highly educated population. In addition to Slovenia, Poland has a relatively high share of population with the higher education as the highest level of education, where the average value of this share for the observed period was slightly more than 25%. If we keep in mind that a higher share of low-educated population and lower share of highly educated population is a reflection of unfavorable structure in the country, it can be concluded from the previous that among CEE countries Serbia and Romania have relatively worst educational structures, while Slovenia and Poland have relatively best educational structures.

Graph 3: Educational structure in CEE countries (in%, average for the period from 2015 to 2019)

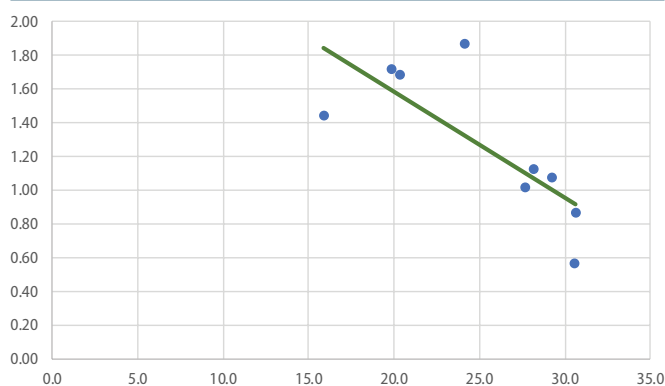


Source: Author's review based on Eurostat data.

As an insight into how the country's educational structure determines the profitability of investing in the highest level of education, the relationship between previously estimated rates of return on investment in higher education and the ratio of the share of highly educated and low-educated population among CEE countries is presented. Based on the graphic presentation it is clear that this connection is negative, which corresponds to the claims that countries with a more favorable educational structure are characterized by a lower value of this rate. That is, in countries where the ratio of the share of the population with higher education to the share of the population with primary education is low, the rate of return on investment in the highest level of education is high. Thus, Serbia and Romania, where the ratio of the share of highly educated and low-educated population is the lowest and amounts to 0.86 and 0.57, respectively, are characterized by the highest rate of return on investment in higher education - about 30% (reference category is primary education). This is typical, as pointed out, for

economically underdeveloped and developing countries where a favorable educational structure has not yet been established. In the Czech Republic and Slovenia, where the ratio of participation of the population with higher and participation of the population with low education is relatively high and amounts to 1.72 and 1.69, respectively, the rate of return on investment in higher education is about 20% (reference category is primary education). The most economically developed countries, such as the United States, are characterized by a rate of return on investment in higher education of about 15%.

Graph 4: Relationship between the rate of return on investment in higher education and the ratio of the share of highly educated and low-educated population in CEE countries

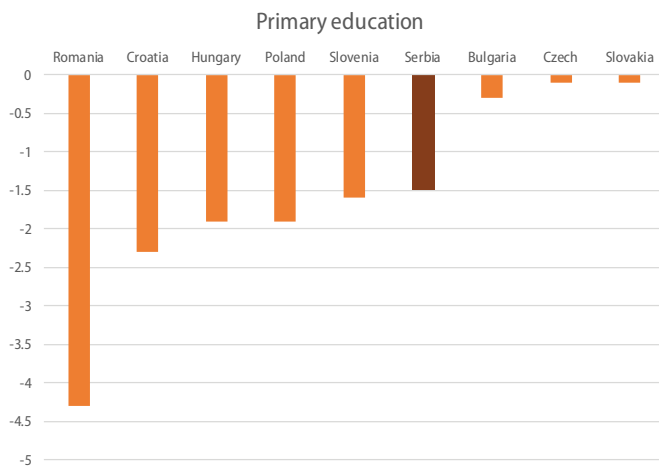


Note: see footnote 2 for evaluation details; the reference category is primary education. Source: Author's review based on LFS data and Eurostat data.

In the period from 2015 to 2019, which refers to the assessment of the rate of return on investment in education, there were some changes in the share of low-educated and highly educated population in CEE countries. In all countries of this region, there has been a decrease in the share of the low-educated, and an increase in the share of the highly educated population, which corresponds to the global trend of improving the educational structure over time. The largest decrease in the share of the population with primary education as the highest level of education occurred in Romania and Croatia, where it amounted to about -4.5 and -2.5 percentage points, respectively, while in the Czech Republic and Slovakia the decrease is almost unnoticeable. In 2019, compared to 2015, the share of the population with primary school as the highest level of schooling decreased by -1.5 percentage points. Similar reductions in this share can be seen in Slovenia, Poland and Hungary. If we take into account the previously presented educational structure in CEE countries, the observed changes in terms of low-educated population are not surprising. It is quite expected that the largest decrease will occur in those countries where this share is relatively high, such as Romania, and that this decrease is not noticeable in those countries where the observed share is extremely low, such as the Czech Republic and

Slovakia. That is, a significant reduction in the share of the population with the primary education as the highest level of schooling can occur only in those countries where this share is still high.

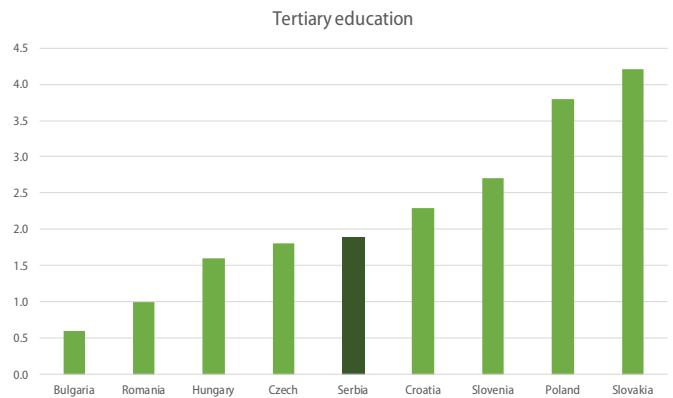
Graph 5: Change in the share of low-educated population in CEE countries (in pp, 2019 compared to 2015)



Source: Author's review based on Eurostat data.

However, it is more important to examine the changes that are taking place in terms of participation of the highly educated population, because individuals with higher education have a set of skills and knowledge that enables the creation of valuable human capital in the country and determines its economic progress. In the period from 2015 to 2019, it can be seen that the largest increase in the share of the population with the higher education occurred in Slovakia and Poland, where it was about 4 percentage points, while the smallest increase in this share occurred in Bulgaria and Romania, 0.6 and 1 percentage point respectively. In Serbia, in 2019 compared to 2015 there was an increase in the share of this population of about 2 percentage points. A similar increase in this share was observed in the Czech Republic and Croatia. Thus, based on the change in the share of highly educated population in CEE countries in the observed period, it is clear that those countries with poorer educational structures, such as Serbia, Bulgaria and Romania, are relatively slow in increasing the share of higher education. The largest increase in the share of the population with the university graduates was recorded in those CEE countries where the share is already relatively high, which indicates that countries cannot greatly improve the educational structure in a short period of time. This stems from the fact that education is a continuous process, so a significant decrease in the low-educated population does not have to be accompanied by a significant increase in the highly educated population (but by an increase in the share of the population with secondary education).

Graph 6: Change in the share of highly educated population in CEE countries (in pp, 2019 compared to 2015)

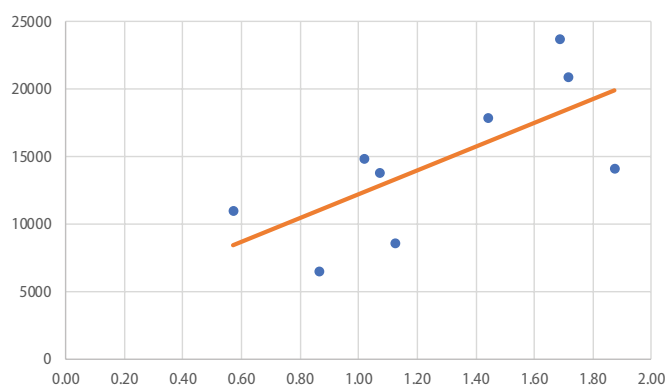


Source: Author's review based on Eurostat data.

If we look at the relationship between the ratio of the share of highly educated and low-educated population and the level of development, measured by the value of gross domestic product per capita (GDP pc), it can be seen that it is positive. It should be borne in mind that this positive relationship does not indicate causality, but it can be argued that CEE countries that have a more favorable educational structure are more economically developed. This follows from the fact that the educational structure determines the value of the country's human capital, which is an important determinant of economic development. Thus, those CEE countries in which the ratio of the share of the population with higher education and the share of the population with low education is high are among the countries where the value of GDP pc is higher. In the period from 2015 to 2019, Serbia, as a country with a relatively unfavorable educational structure (the ratio of the share of highly educated and low-educated population is about 0.90), recorded the lowest average value of GDP pc of about \$6,500. In the same period, Slovenia as a country with a relatively favorable educational structure (the ratio of participation of highly educated and low-educated population is about 1.70) is characterized by an average GDP pc of about \$23,500. In summary, CEE countries that have a less favorable educational structure are also economically less developed. In addition, it is true for these countries that due to the lower share of the highly educated population, the rate of return on investment in higher education is higher. Thus, the high rate of return on investment in the highest level of education observed in Serbia, Romania and Bulgaria, is a reflection of the less favorable educational structure of these countries, which are among the economically less developed CEE countries. These differences in the educational structure are probably due to the different transition paths of CEE countries. Serbia, for example, later began the transition process, as it faced a series of economic difficulties (such

as wars and sanctions) during the 1990s, which must have affected the country's educational structure. In addition, the mentioned differences have deep historical roots. It is known that the countries that were part of the Habsburg Monarchy (such as Poland, the Czech Republic, Slovakia) had a more favorable educational structure than the countries that were part of the Ottoman Monarchy (such as Serbia, Bulgaria, Romania). Over time, these differences diminished, especially during the 1960s and 1970s.

Graph 7: Relationship between the ratio of the share of highly educated and low-educated population and the level of development in CEE countries



Source: Author's review based on Eurostat and World Bank data.

Conclusion

In this Highlight, we gave a comparative overview of the rates of return on investment in education for Serbia and selected countries of Central and Eastern Europe in the period from 2015 to 2019. According to the results of the evaluation, in the case of Serbia, the person with primary education as the highest level of education earns on average a salary that is about 10% lower than the salary earned by the person with secondary education as the highest level of education. A similar negative rate of return on investment in primary education can be observed in the case of Croatia, Bulgaria and Romania. The highest negative rate of return on investment in the lowest level of education was recorded in Hungary, where the average person with primary education as the highest level of education earns 12% less than the person with secondary education as the highest level of education. The lowest negative rate of return on investment in primary education was observed in Slovakia, where a person with low education earns only 5% less on average compared to a person with secondary education. Low negative rates of return on investment in primary education are most likely the result of the existence of a minimum wage institute, which approximates the earnings of a low-educated person to a person with a secondary education.

The results of the evaluation indicate that the highest positive rate of return on investment in the highest level of education among the observed CEE countries was recorded in Serbia. In Serbia, the person with finished higher education earns on average about 20% more than the salary earned by the person with secondary education as the highest level of education. The lowest positive rate of return on investment in higher education can be observed in Slovakia, where the person with finished higher education earns on average about 10% more than a person with secondary education.

It has been shown that the educational structure of the country largely determines the cost-effectiveness of investing in the highest level of education. The relationship between the previously estimated rates of return on investment in higher education and the ratio of the share of highly educated and low-educated population among CEE countries is negative, so that countries with more favorable educational structure are characterized by lower values of this ratio. That is, it has been shown that in countries where the ratio of the share of the population with higher education and the share of the population with primary education is low, the rate of return on investment in the highest level of education is high. Thus, the relatively high rate of return on investment in the highest level of education, observed in Serbia and Romania, is a reflection of the less favorable educational structure in these countries, which is characteristic of economically underdeveloped and developing countries. Also, based on the change in the share of highly educated population in CEE countries in the observed period, it was pointed out that those countries with poorer educational structure, such as Serbia, Bulgaria and Romania, are relatively slow in increasing the share of population with higher education.

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