

HIGHLIGHTS

Highlight 1. Impact of the COVID-19 pandemic on educational outcomes in Central and Eastern European countries: a comparative analysis

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Introductory considerations

The impact of the COVID-19 pandemic can be seen in various aspects of the social sphere, through the significant challenges that social actors are increasingly facing. One of these important aspects relates precisely to the challenges faced by educational systems. The challenges faced by countries around the world in terms of the educational process are becoming increasingly acute as a result of the changes that have arisen in response to the crisis. One of the reasons for this situation is certainly the fact that various participants in the education system in recent years are going through an experience that has not been recorded so far, and which requires rapid adjustments in order to maintain the educational process that will provide appropriate learning outcomes. The learning process changed during the COVID-19 pandemic according to circumstances imposed for health reasons, which include distance learning and similar teaching activities, in order to minimize contacts between participants. The provision of non-standard educational services has the risk of having a negative impact on educational outcomes, in terms of skills and knowledge that students should acquire, and thus have a negative impact on their economic prosperity in the future. A number of international organizations, such as the World Bank and the United Nations, warn of the possible damage that will be caused by the coronavirus pandemic in this segment, and in various ways provide support to countries in overcoming the crisis (World Bank, 2020).

The COVID-19 pandemic caused a disturbance in the lives of a large number of pupils and students, but also teachers. This disorder is even more significant if we keep in mind that even before the outbreak of the pandemic, the world was to some extent faced with a learning crisis. Niamey, according to the World Bank, about 258 million children worldwide were not included in the educational system, and the learning poverty rate reached close to 55% in low and middle-income countries – thus slightly more than half of children in

these countries under 10 year is unable to read and write. How pronounced this problem is is best illustrated by the fact that in the countries of sub-Saharan Africa the learning poverty rate is close to 90%. The coronavirus pandemic has only deepened this crisis, and its negative impact on the formation of human capital among countries can be assessed as long-term. Thus, during the first wave of the COVID-19 pandemic, in April 2020, as many as 1.6 billion students were outside the classical education system, due to the closure of schools in almost all countries. In the context of the growing insecurity faced by schools operating in a hybrid learning system, recent studies point to potential losses in human capital and rising inequality as a consequence of such education (UNESCO, 2020).

In addition, besides this global negative shock to educational systems, the negative implications that the global economic recession will have on household income should be also taken into account, which will increase school dropout rates and result in reduced public spending on education. It is estimated that due to the loss in learning and the increase in the dropout rate, the generation of students who go through the education system during the COVID-19 pandemic will lose a total of about 10 million billion dollars during their working life, or about 10% of the global gross domestic product. Moreover, historical data and initial records of the effects of the coronavirus pandemic point to the problem of growing inequality in the years to come. It is certain that these effects will be felt differently among children coming from different socio-economic groups, i.e. that children from poorer households will be significantly more negatively affected by the changes that have occurred in the educational system. It turns out that particularly vulnerable groups, in addition to students from poorer socio-economic groups, are female students, students with disabilities and students belonging to ethnic minorities, because these groups have more difficulties in accessing distance learning, educational material, and the like. This will greatly contribute to increasing the gap in educational outcomes between students with different social status, deepening the crisis of inequality (World Bank, 2020).

Thus, the coronavirus pandemic will certainly have both short-term and long-term negative effects on educational systems. First of all, the economic premium from education, due to the collapse of human capital, is likely to decline, increasing the differences in the level and quality of education. In this regard, questions arise as to how different countries will react to the disturbances caused by the pandemic in the education system. All Central and Eastern European countries have responded to the crisis by introducing different learning

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modalities. However, despite the relatively quick response to the new situation, losses in the quantity and quality of knowledge among students in these countries will be inevitable and significant, disproportionately affecting students from vulnerable groups. Due to the closure of schools, educational policy makers in Central and Eastern European countries, following the example of developed countries, have combined various ways of providing educational services outside schools, via the Internet, television or other digital content. However, access to these facilities is limited according to the level of development of the country, and is especially limited among students who come from poorer households in these countries. Consequently, it is important to examine how these changes in education will affect learning outcomes.

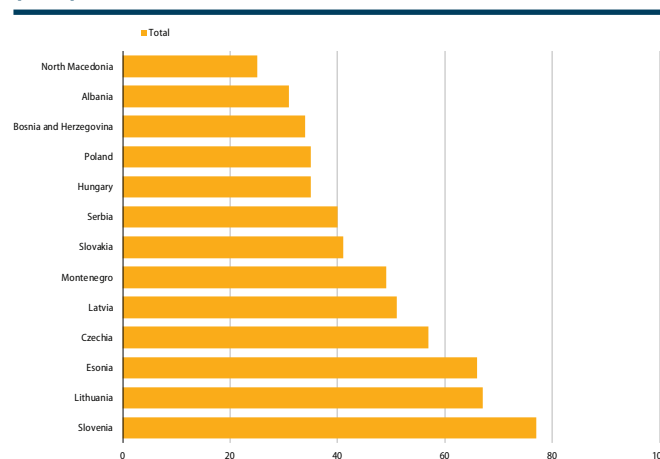
The subject of this paper is to present the effects of the transition to the home learning system due to the COVID-19 pandemic in terms of educational achievements of students in Central and Eastern European countries. The focus of the paper is to show the differences that exist in the availability of Internet communication and information and communication technologies among students of different socio-economic status. Accordingly, the aim of the paper is to indicate a possible increase in the gap in educational outcomes among students, as a consequence of unequal learning opportunities.

How have educational systems in Central and Eastern European countries responded to the crisis?

In response to the closure of schools due to the coronavirus pandemic, educational systems in Central and Eastern European countries have undergone significant changes, which have been directed towards distance learning. The countries of the mentioned region combined preventive measures in order to prevent the spread of the infection with measures to ensure continuity in the education process. After the schools closed in the first months of last year all countries in this region introduced different learning modalities in order to ensure a smooth educational process. These modalities included teaching that was realized through various digital contents. Very often, distance learning was organized by combining digital content available to educational policy makers. Among the countries of Central and Eastern Europe this meant primarily the provision of teaching content through national television or radio stations. However, in order for all subjects to be represented within the curriculum, due to limited capacity, there was a significant reduction in the time provided for teaching in a particular subject.

In Central and Eastern European countries a large number of households have access to television and radio content. However, despite the fact that this provides some fairness in terms of access to education, it does not guarantee the quality of the requirements of the curriculum given the low degree of interactivity between students and teachers. The availability of effective digital educational content, which includes the possibility of distance learning using various online platforms (such as Zoom, Skype, Webex), in the countries of Central and Eastern Europe is not so pronounced. Data from the Organization for Economic Co-operation and Development indicate poor access to effective digital educational content in the countries of the region. Namely, the availability of such educational content is higher than the average of the European Union countries, which is 51%, only in Latvia, the Czech Republic, Estonia, Lithuania and Slovenia. All other countries of Central and Eastern Europe have a percentage of availability of this type of teaching lower than the stated average. Among the poorer are North Macedonia, Albania, Bosnia and Herzegovina, Poland and Hungary, where the availability of effective digital educational content is less than 40%. Countries like Serbia, Slovakia and Montenegro are among the better positioned, because the availability of such content is about 10 percentage points higher than in the previously mentioned countries. As the possibility of conducting distance learning through online platforms among the countries of Central and Eastern Europe, and especially among the countries of the Western Balkans is limited, policy makers were forced to use other best solutions. This referred to the provision of the teaching process through television and radio content.

Graph 1. Availability of effective digital educational content in Central and Eastern European countries (in%)

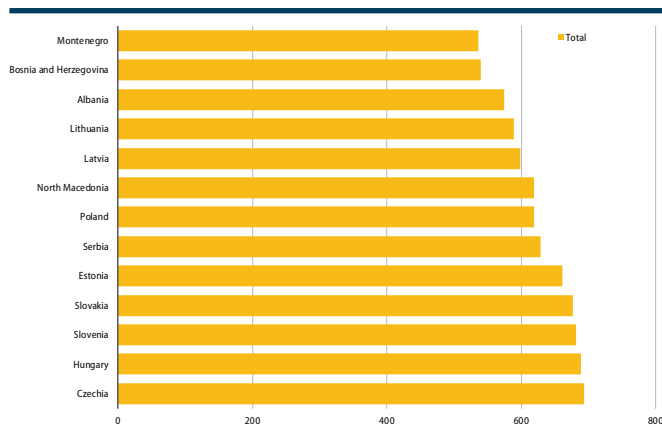


Source: OECD (2019)

Highlight 1: Impact of the COVID-19 pandemic on educational outcomes in Central and Eastern European...

Instructional time in compulsory education, i.e. the time that teachers spend with students per class, which is one of the key determinants of learning, decreased during the COVID-19 pandemic due to the already mentioned reason. However, the countries of Central and Eastern Europe had a relatively low instructional time even before the outbreak of this pandemic, compared to the European average. Moreover, the data indicate that the recommended instructional time in all countries of this region is below the average of the European Union countries, which is 739 hours per year per class. In Montenegro, Bosnia and Herzegovina, Albania, Lithuania and Latvia, the instructional time is less than 600 hours per year. Slightly better instructional times are recorded, for example, in Estonia, with 663 hours, Hungary, with 689 hours, and the Czech Republic, with 694 hours. Instructional time in compulsory education in Serbia is 628 hours per year per class on average, which ranks it among the middle-positioned countries of Central and Eastern Europe according to this indicator. Thus, students from Central and Eastern European countries had, on average, 100 to 200 hours less per year compared to their European peers even before the outbreak of the coronavirus pandemic. Distance learning during the pandemic period, which resulted in a reduction in instructional time, thus exacerbated this already poor situation.

Graph 2. Average instructional time in compulsory education per class in Central and Eastern European countries (annual number of hours)



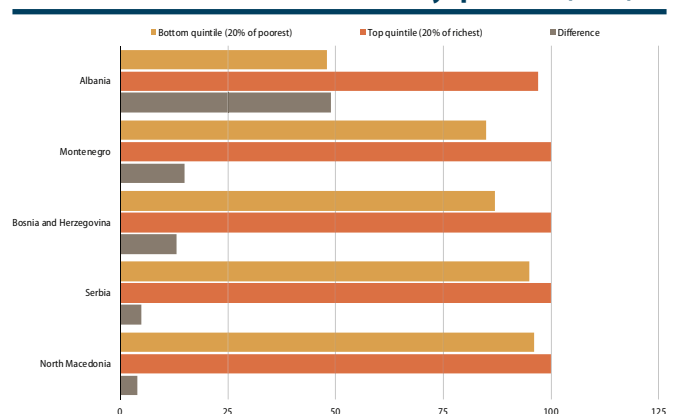
Source: OECD (2019)

Availability of the Internet and information and communication technologies: the gap between students

The transition to a home-based learning system, the availability of the Internet and information and communication technologies have gained in importance. The data indicate a significant lag of students in the countries of Central and Eastern Europe compared to their peers from the European Union. Within this region, the countries of the Western Balkans can be singled out.

According to the World Bank, only 60% of households in the Western Balkans have a fast enough internet connection to access online platforms. Also, large differences in terms of access to high-speed internet connection are present among the countries themselves. Thus, for example, in Bosnia and Herzegovina, only 35% of households have access to high-speed Internet, which is 13 percentage points less than in North Macedonia, or 29 percentage points less than in Serbia. More significantly, differences in the availability of internet connection are also present within these countries among students belonging to different quintiles according to socio-economic status. Namely, 100% of students from all countries of the Western Balkans, except Albania, who belong to families with the highest socio-economic status (20% of the richest) have access to high-speed internet. This, however, is not the case with students belonging to families with the lowest socio-economic status (20% of the poorest). The data show that less than 50% of students from the poorest families in Albania, and between 80% and 90% in other Western Balkan countries, have access to high-speed internet connection. Thus, the gap between students from the poorest and richest families ranges from just 4 percentage points in North Macedonia to almost 49 percentage points in Albania.

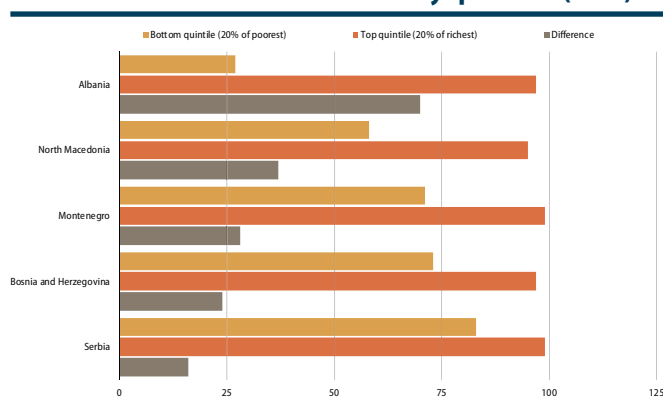
Graph 3. Internet availability in the household in the countries of the Western Balkans by quintiles (in %)



Source: World Bank (2020)

The changed way of working, which implies learning from home, largely depends on the availability of information and communication technologies (computers, printers, etc.) in the household. On average, one in ten households in the Western Balkans does not have a computer. At the same time, Albania stands out again, where almost 30% of households do not own a computer. As in the case of access to high-speed internet connection, the differences in accessibility among students with the lowest and highest socio-economic status are pronounced. Thus, almost 100% of students among all the countries of the Western Balkans from the richest families have a computer that can be used for educational purposes. According to the World Bank, however, less than 30% of students from the poorest families in Albania, and between 60% and 80% in other Western Balkan countries, own a computer that can be used for education. Moreover, the gap among students from the poorest and richest families in terms of the availability of information and communication technologies is even more pronounced than the one observed in the case of the availability of high-speed internet connection. This is illustrated by the fact that the difference in the availability of computers for educational purposes among the poorest and richest students ranges from 16 percentage points in Serbia to almost 70 percentage points in Albania.

Graph 4. Availability of information and communication technologies in the household in the countries of the Western Balkans by quintiles (in %)



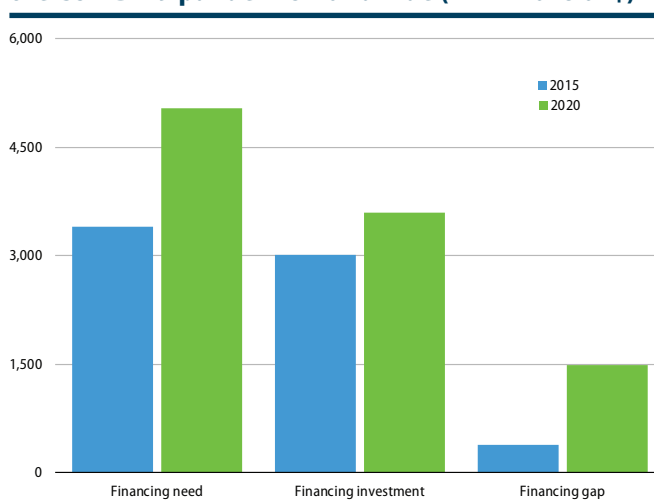
Source: World Bank (2020)

Previously stated indicates that the distance learning system during the COVID-19 pandemic will not provide equal conditions for the acquisition of knowledge and skills for all students, bearing in mind these limitations. This implies that this crisis will contribute to the further deepening of learning inequalities between students with different socio-economic status.

Estimated impact of the crisis on educational outcomes

A recent United Nations report (2020) points to the fact that even before the outbreak of the coronavirus pandemic, a large number of countries had difficulty fulfilling their obligation to provide education as a basic human right to all students. This view is supported by the fact that in 2015 there was a significant difference between the expected and actually invested financial resources in education to achieve the goal of sustainable development. Globally, the required financial resources for 2015 amounted to 3,400 million dollars, while the actual investments amounted to 3,010 million dollars, which means that about 11% less was invested than necessary. The crisis caused by the pandemic, due to the specifics of learning, contributed to a significant increase in the estimated necessary funds, so that in 2020 they amounted to 5,039 million dollars. This increase is therefore the result of an increase in the cost of providing educational services in times of crisis. However, the actual invested funds reached only 3,559 million dollars last year, which is close to 30% less than the necessary investments. Thus, the COVID-19 pandemic has contributed globally to an even greater increase in the gap between what needs to be invested and what is actually invested in order to achieve the adopted goals of sustainable development.

Graph 5. Difference in expected and actual financial resources necessary for education before and after the COVID-19 pandemic worldwide (in millions of \$)



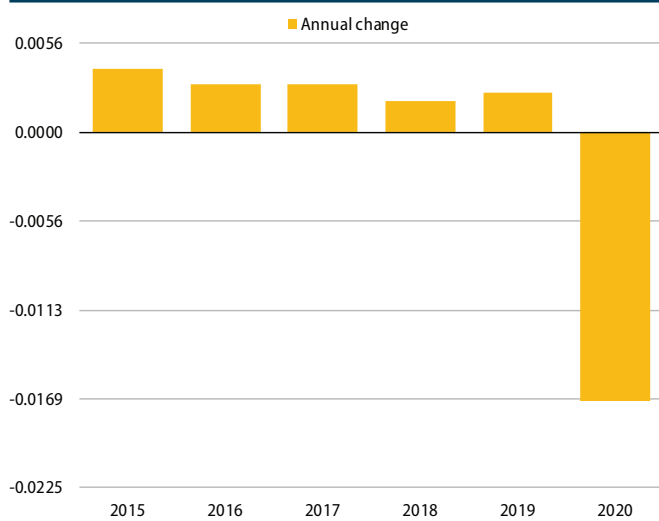
Source: United Nations (2020)

As a result of this difference it is estimated that the impact of this pandemic will have not only short-term but also long-term effects on educational outcomes. One of them refers to the human development index, within which the dimension of education occupies an important place. Although in previous years there has been a decline in the annual growth of the value of the human

Highlight 1: Impact of the COVID-19 pandemic on educational outcomes in Central and Eastern European...

development index at the global level, it is expected that in 2020 the value of this index compared to 2019, after a long period of growth, will decline. Due to the closure of schools and the transition to a home-based learning system and the impossibility of investing the necessary financial resources, United Nations (2020) researchers estimate that the human development index for 2020, globally, will fall by 0.02. This decline is primarily due to the fact that the dropout rate will increase, as a result of an increase in the number of people in extreme poverty in the world between 70 and 100 million, which will negatively affect the parents' decision to support further education.

Graph 6. Estimated impact of the COVID-19 pandemic on the value of the global human development index



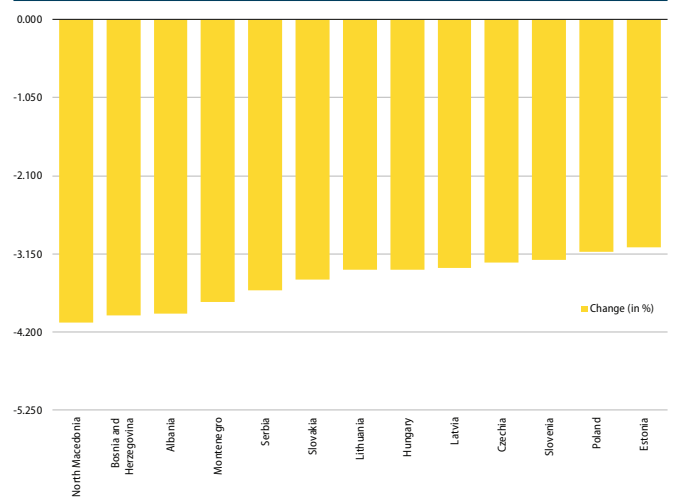
Source: United Nations (2020)

In previous years, before the outbreak of the coronavirus pandemic, the countries of Central and Eastern Europe faced a crisis in their educational systems, which is reflected in the results achieved by students in these countries on internationally comparable tests. The results of the last PISA test from 2018 indicate that almost 55% of students from the countries of this region do not, on average, acquire knowledge and skills that are effective on the labor market during schooling. Nearly 50% of students in Albania, North Macedonia and Montenegro, according to the results of the PISA test from 2018, are not functionally literate. Even in the case of Serbia, whose students record the best results among the countries of the Western Balkans, that percentage is very high and amounts to about 35%.

Closing schools and moving to a distance learning system is estimated to have greater negative effects on educational outcomes in Central and Eastern European countries. The expected decline in the quality of education will result, above all, in the erosion of human capital and a reduction in educational and income

prospects in the long run. World Bank researchers (2020) thus used the results of PISA testing to assess the effects of the COVID-19 pandemic. Assuming that one school year (i.e. 10 months during the year) corresponds to an average of 40 PISA points, closing schools for 4 months without a correspondingly efficient transition to a home learning system will result in a drop of approximately 16 PISA points, or a drop of 9 PISA points with a correspondingly efficient transition to a distance learning system. This will return a number of countries, such as Bosnia and Herzegovina, Albania and North Macedonia, to the level of results achieved in 2015. In these countries, the educational achievements of students will be worse by almost 4% after the pandemic compared to 2018. It is estimated that Slovenia, Poland and Estonia will have the smallest decline, in which the educational achievements of students will be worse by about 3% compared to 2018. In Serbia, the decline will be close to 3.5%.

Graph 7. Estimated impact of the COVID-19 pandemic on student achievement in PISA testing in Central and Eastern European countries (in points)

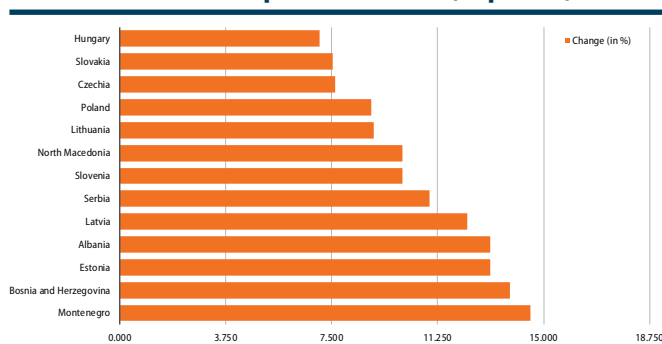


Source: World Bank (2020)

It is especially important to point out that the closure of schools and the new learning system will contribute to the increase of inequality in learning, i.e. differences in the educational achievements of students from the poorest and richest families. This gap in the results of the 2018 PISA test, which ranged from almost 1.5 school years (about 60 PISA points) in Albania and Bosnia and Herzegovina to just over 2 school years (about 90 PISA points) in North Macedonia, will greatly increase. This increase can be expected since, as shown, students from families with poorer socio-economic status will acquire less knowledge and skills in the distance learning system, due to the different constraints they face. According to the World Bank estimates, differences in educational attainment between students from the

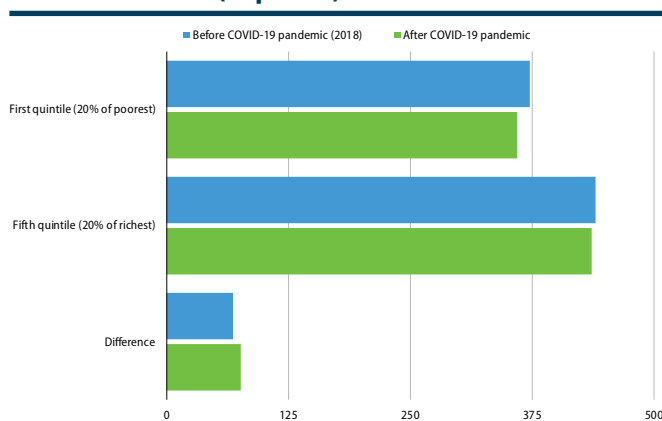
poorest families and the richest families will increase the least in Hungary, Slovakia and the Czech Republic (around 7.5%) and increase the most in Albania, Estonia, Bosnia and Herzegovina and Montenegro (slightly less than 15%). The difference between the educational achievements of students with the worst and the best socio-economic status in the case of Serbia will increase by about 10% as a result of the COVID-19 pandemic.

Graph 8. Estimated impact of the COVID-19 pandemic on the differences in educational attainment of the poorest and richest students in the PISA test in Central and Eastern European countries (in points)



Source: World Bank (2020)

Graph 9. Estimated impact of the COVID-19 pandemic on the differences in the average educational attainment of the poorest and richest students in the Western Balkans (in points)



Source: World Bank (2020)

If we look exclusively at the countries of the Western Balkans, the estimated gap between students belonging to different quintiles according to socio-economic status will increase from 68 PISA points to 76 PISA points as a result of the COVID-19 pandemic. According to the results of the PISA test from 2018, in the case of the countries of the Western Balkans, it was noticed that students from the poorest families achieved an average of 372 PISA points, compared to students from the richest families who achieved an average of 440 points. The World Bank estimates that after the crisis, students from the poorest families will achieve an average of

12 PISA points less, while students from the richest families will achieve an average of 4 PISA points less, compared to the 2018 results.

Conclusion

The education systems in the countries of Central and Eastern Europe have undergone significant changes due to the closure of schools due to the COVID-19 pandemic, which were directed towards transition to the distance learning system. For that reason, the availability of high-speed internet connection and various information and communication technologies is gaining in importance. The data indicate that only 60% of households in the Western Balkans have a fast enough internet connection to access online platforms. More significantly, the differences in the availability of internet connection are particularly pronounced within these countries among students belonging to different quintiles according to socio-economic status. Thus, the difference in the availability of high-speed internet connection among students from the poorest and richest families ranges from only 4 percentage points in North Macedonia to almost 49 percentage points in Albania. Moreover, according to data, one in ten households in the Western Balkans does not have a computer. Similarly, as in the case of the availability of high-speed internet connection, the differences in the availability of computers among students with the lowest and highest socio-economic status are pronounced. In addition, the gap among students from the poorest and richest families in terms of the availability of information and communication technologies is even more pronounced than the one observed in the case of the availability of high-speed internet connection. Thus, the difference in the availability of computers for educational purposes among the poorest and richest students ranges from 16 percentage points in Serbia to almost 70 percentage points in Albania.

In previous years, before the outbreak of the COVID-19 pandemic, the countries of Central and Eastern Europe faced a crisis in their education systems, which is reflected in the results that students in these countries are achieving on internationally comparable tests. According to the results of the last PISA test from 2018, almost 55% of students from the countries of this region do not acquire knowledge and skills that are effective on the labor market on during schooling. It is estimated that the closure of schools for 4 months without a correspondingly efficient transition to a home learning system will result in a drop of approximately 16 PISA points, or a drop of 9 PISA points with a correspondingly efficient transition to a distance

Highlight 1: Impact of the COVID-19 pandemic on educational outcomes in Central and Eastern European...

learning system. This will return a number of countries, such as Bosnia and Herzegovina, Albania and North Macedonia, to the level of results achieved in 2015. In these countries, the educational achievements of students will be worse by almost 4% after the pandemic compared to 2018. It is estimated that Slovenia, Poland and Estonia will have the smallest decline, in which the educational achievements of students will be worse by about 3% compared to 2018. In Serbia, the decline will be 3.5%.

The fact that the closure of schools and the new learning system will contribute to the increase of inequality in learning, i.e. differences in the educational achievements of students from the poorest and richest families can also be singled out. According to estimates, differences in educational attainment between students from the poorest families and the richest families will increase the least in Hungary, Slovakia and the Czech Republic (around 7.5%) and increase the most in Albania, Estonia, Bosnia and Herzegovina and Montenegro (slightly less than 15%). The difference between the educational achievements of students with the worst and the best socio-economic status in the case of Serbia will increase by about 10% as a result of the coronavirus pandemic. If only the countries of the Western Balkans are observed, the estimated difference between students

belonging to different quintiles according to socio-economic status will increase from 68 PISA points to 76 PISA points as a consequence of this pandemic. It is estimated that after the crisis, students from the poorest families will achieve an average of 12 PISA points less, while students from the richest families will achieve an average of 4 PISA points less, if compared to the results from 2018.

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