

## The Consequences of Covid-19 on Youth Unemployment in The Bulgaria

Stanimir Stamatev<sup>1</sup>, Vasil Bozev<sup>2</sup>

Department of Management, University of National and World Economy, Bulgaria<sup>1</sup>

Department of Statistics and Econometrics, University of National and World Economy, Bulgaria<sup>2</sup>

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### Info Articles

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### Abstract

**Objective:** The purpose of this article is to examine how COVID-19 has an impact on unemployment among young people in Bulgaria. It shows the impact of the achieved educational level on the change in the unemployment levels among young people. In addition, this academic work attempts to establish what the future tendency in the development of youth unemployment might be in a subsiding pandemic.

**Methodology:** The article uses empirical data from the NSI (National Statistical Institute) and Eurostat regarding the level of youth unemployment in Bulgaria on a general and educational scale. A forecast has been made, which is based on a trend model, whose parameters are estimated by the method of the least squares.

**Results:** Our findings indicate that COVID-19 has had a detrimental effect on unemployment among young people and it has risen during the pandemic. In addition, our forecast illustrates an increase in youth unemployment in the upcoming two years. Despite this, according to the data for Bulgaria, in 2021 compared to 2019, youth unemployment among people with primary and lower education has seen an increase by 7.4%; with 4.2% among those who have acquired secondary education and only with 1% among those with higher education. The analysis illustrates that during the COVID-19 pandemic, young people in Bulgaria with higher education are at a considerably lower risk in comparison to those with lower education.

**Implication:** The study's results provides beneficial starting point in improving the performance of the Labour market policy and the development of the educational system.

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\*Address Correspondence:

E-mail: [sstamatev@unwe.bg](mailto:sstamatev@unwe.bg)<sup>1</sup>,  
[v\\_bozev@unwe.bg](mailto:v_bozev@unwe.bg)<sup>2</sup>

## INTRODUCTION

The global pandemic COVID-19 broke out in the beginning of 2019 and has set new challenges to the economies of the world, including Bulgaria. The soaring growth of the Gross Domestic Product (GDP) distinctive for the years before 2019, has rapidly declined in the following years. The declining economic activity has also had a detrimental impact on the labor market. This has given good reason to many economists and analysts to discuss the state of the labor market in Bulgaria. These negative consequences have also taken their toll on the youth as the unemployment rate has gone up by close to 4 percentage points in 2021 compared to 2019.

Pursuing things further, the current conditions of the deteriorating economic and demographic tendencies have determined the growing interest in the state, dynamics, and prospects of the results of the realization of young people in the labor market. The importance of using young people as an economic resource is determined by two main factors. Firstly, to date, they are around 25% of the workforce (NSI, Demographic and Social Statistics, 2021). Secondly, they are the future of the nation and the initial conditions of their economic activity are an important prerequisite for long-term economic growth.

The scope of this paper is to examine the impact of COVID-19 on the Bulgarian youth unemployment rate. In order to achieve this goal, we must take into account the empirical data on the unemployment of the population aged between 15-29, which is defined in the article as "young people"<sup>1</sup>. Our assumption is that even in a subsiding COVID-19 pandemic, youth unemployment will continue to rise. It will have the strongest impact on those with the lowest form of education and to a lesser extent on those who have acquired higher education.

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## LITERATURE REVIEW

A study by the Resolution Foundation (Henehan, 2021) established that in May 2020, a third of the people aged between 18-24 have been fired or have lost their main job. Contrary to popular belief, in 2020 unemployment increased for both graduates and non-graduates (by the same percentage) despite the numbers of years that have passed since leaving school. For instance, among those who chose to discontinue their education a year earlier, the unemployment rate has jumped from 14% to 18% between 2019 and 2020. In addition, the unemployment rate for graduates rose from 10 to 14%. African-Americans took the biggest hit; nearly one in three had recently discontinued their education and were left unemployed in 2020 compared to 2019. Asians are in second place where one in four young people were left unemployed in 2020 compared to 2019.

Another study is connected to our neighbor Greece (Katris, 2021). The conducted study examines the unemployment in Greece compared to that of the European Union. Youth unemployment is in part also touched upon. The analysis studies what the possible consequences of COVID-19 could be on the unemployment rate among a variety of groups – young people, men, women, etc. The findings show that Greece will be less affected than the European Union. Unemployment among women in Greece and youth unemployment in EU27 are expected to take the biggest hit from COVID-19, which suggests the need for policy measures to be adopted in order to alleviate the effect it will have on the said groups.

## METHODS

### The unemployed and unemployment rate

The levels of employment and unemployment characterize the state of a given labor market. Together they form the labor force (the presently economically active part of the population) – all people of working age who put in or offer their labor for the production of goods and services (Methodology of "Monitoring of the labor force", NSI).

Of key importance in the analysis of the labor market is the clear definition and identification of the unemployed individuals.

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<sup>1</sup> According to the Bulgarian legislation, and in particular the "Law on Youth" in Bulgaria, it is accepted that the population in the age between 15 and 29 should be included in the group of "young people".

According to the methodology of the Periodic labor force surveys (PLFS) conducted by EUROSTAT unemployed individuals are those aged 15 to 74 who simultaneously meet the following criteria: firstly, they have no job in the week of the survey; secondly, they have actively looked for a job in the previous four weeks; thirdly, they are available to start working in the following three months (Eurostat). Therefore, the primary criteria, used to identify an unemployed individual, are to not have a job at the moment, to have actively looked for one and to have the necessary skills to work. These principles are written down in a separate resolution of the ILO (Pavlov, 2008) and have been adopted by almost all market economies in the world, Bulgaria included.

There are two state institutions in Bulgaria, which gather, summarize, and analyze information regarding unemployment – the Employment agency (EA) at the Ministry of Labor and Social Policy (MLSP) and the National Statistical Institute (NSI). However, the methodologies of the two institutions differ drastically.

The EA's methodology of determining unemployment is based on a monthly registration through an "administrative system" (in labor offices) of jobless individuals and those on unemployment benefits (Employment agency). EA data have certain advantages related to the frequency of collecting, processing, and announcing – all done monthly. The information includes important demographic characteristics such as sex, age, level of education, location, etc. for each registered unemployed individual. In spite of the reliability of the data, collected by the EA, there are certain weaknesses in the approach the agency uses. Firstly, the data does not include unemployed individuals who are not registered with labor offices. Secondly, it is possible for some of the unemployed to register in order to receive unemployment benefits while simultaneously working on the grey market. Therefore, in practice, the unemployment level determined by the EA's administrative system for registration may be far lower than its real value.

Unlike the methodology of the EA, which is generally based on the voluntary registration of unemployed individuals in labor offices, the NSI methodology consists of observations of the labor force via a sample statistical survey including 2438 nests (census sections) and 19504 regular households. According to the methodology of monitoring of national statistics, in line with ILO recommendations and EUROSTAT requirements, unemployed are those individuals aged 15 to 74 who do not have a job in the calendar week of the survey but are actively looking for one over a four-week period and are available to start work within two weeks of the observed period ("Labor force survey" methodology, NSI).

When it comes to calculating the **unemployment rate**, the two institutions of Bulgaria, the EA and the NSI, also use different methodologies. The EA calculates the unemployment rate as the ratio between the number of unemployed individuals and the number of economically active individuals (the labor force) as of the last census of the country, i.e., it uses the same basis for one period. On the other hand, the NSI does not use the numbers from the previous census, rather a dynamically changing basis, obtained as a result of quarterly surveys on a representative sample of the population. Therefore, the unchanging basis for calculating the unemployment rate used by the EA and the above remarks on the approach to data collection in practice make the NSI's methodology more preferred and realistic. Aside from the general unemployment rate of the working age population in a given country, the unemployment rate is also calculated by age groups (aged 18-24; aged 25-34; aged 35-44; aged 45-54; 55 and over, etc.), as well as by sex, place of residence and level of education.

Since the first quarter of 2012, a new approach has been introduced in the weighing of the units from the labor force survey sample ("Labor force observation" sample, NSI), the influence of which needs to be taken into consideration when utilizing data from the labor force survey. This is why the scope of the survey begins from the following year – 2013, and continues until the latest available data (2021).

Since the first quarter of 2021 some changes has been implemented in compliance with the Regulation (EU) 2019/1700 of European Parliament and of the Council establishing a common framework for European statistics relating to persons and households, based on data at individual level collected from samples, and consequent implementing acts in the field of labour force statistics. These changes concern mainly employment and unemployment definitions, in particular:

- persons on leave for looking after a child between 1 and 2 years of age who are receiving fixed compensation for the duration of the leave, are considered employed (they used to be considered economically inactive up to the end of 2020);
- persons on unpaid parental leave for looking after a child between 2 and 8 years of age are considered employed only if the expected one-time duration of using that leave is at most three months. All persons on this kind of leave used to be considered employed up to 2020;
- persons who are absent from work due to reasons other than holidays, illness, accident or maternity and parental leave are considered employed only if the duration of this absence is 3 months or less (even they are being partially compensated);

- persons who produce agricultural goods for self-consumption are excluded from the employed person's category even if they satisfy their household's main consumption needs by that production. Employed are considered only persons growing agricultural produce, which main part is intended for sale or barter.

Due to changes in the LFS methodology data for the first quarter of 2021 are not fully comparable with those for previous periods.

### Methodology for predicting the unemployment rate

A forecast for the unemployment coefficient will be made in order to establish how it will develop over the following two years. To do so a trend model with the following function will be used:

$$Y = f(t)$$

Where:

$Y$  – the unemployment coefficient;

$t$  – time as an independent variable.

Trend models eliminate the effect of random and periodic causes and consider only the development trend. The functions of these models can take many forms:

Linear model:

$$\hat{Y}_t = \beta_0 + \beta_1 t$$

Quadratic model:

$$\hat{Y}_t = \beta_0 + \beta_1 t + \beta_2 t^2$$

Logarithmic model:

$$Y = \beta_0 + \beta_1 \ln t$$

Cubic model:

$$\hat{Y}_t = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 t^3$$

Exponential model:

$$Y = \beta_0 + (\beta_1 e^{t})$$

Others....

Where:

$\beta_i$  – parameters in the equation;

$\hat{Y}_t$  – adjusted values of the unemployment coefficient.

The model's parameters can be found via the ordinary method of least squares. This means that the sum of the squares of the residuals „  $\epsilon_k$  “ will be minimized.

$$\sum_{k=1}^{N-1} \epsilon_k^2 = \sum_{k=1}^N (Y_k - \hat{Y}_k)^2 = \min$$

In order for this condition to be met, a system of equations needs to be solved.

The forecasted value is reached by following these steps (Mishev and Goev, 2010):

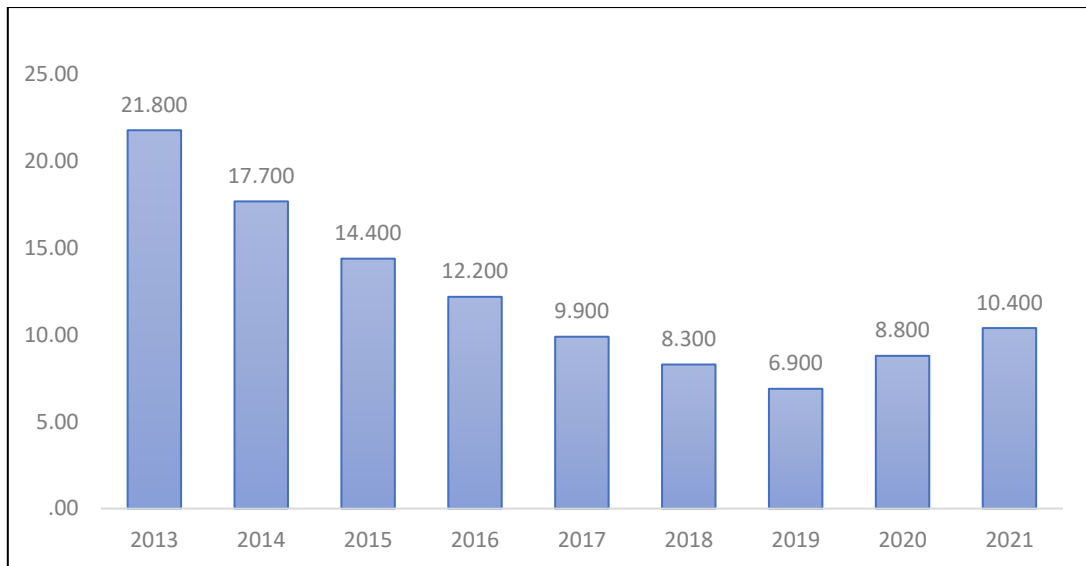
1. Performing an adequacy check on 10 trend models using an *F-test* and leaving only the adequate ones;
2. Choosing the most adequate model for the trend – the one with the highest coefficient of determination ( $R^2$ );
3. Constructing the point estimate of the forecast, which represents the value of the dynamic array. The point forecast is obtained with a longer trend line in the future.

The forecast is marked with  $\hat{Y}_{N+L}$ , where  $N$  is the final period and  $L$  is the forecast horizon. The forecast will be realized using the program IBM SPSS.

## FINDINGS

### Analysis of unemployment rates among young people

There are different tendencies in the levels of youth unemployment for the period 2013-2021 (Figure 1):

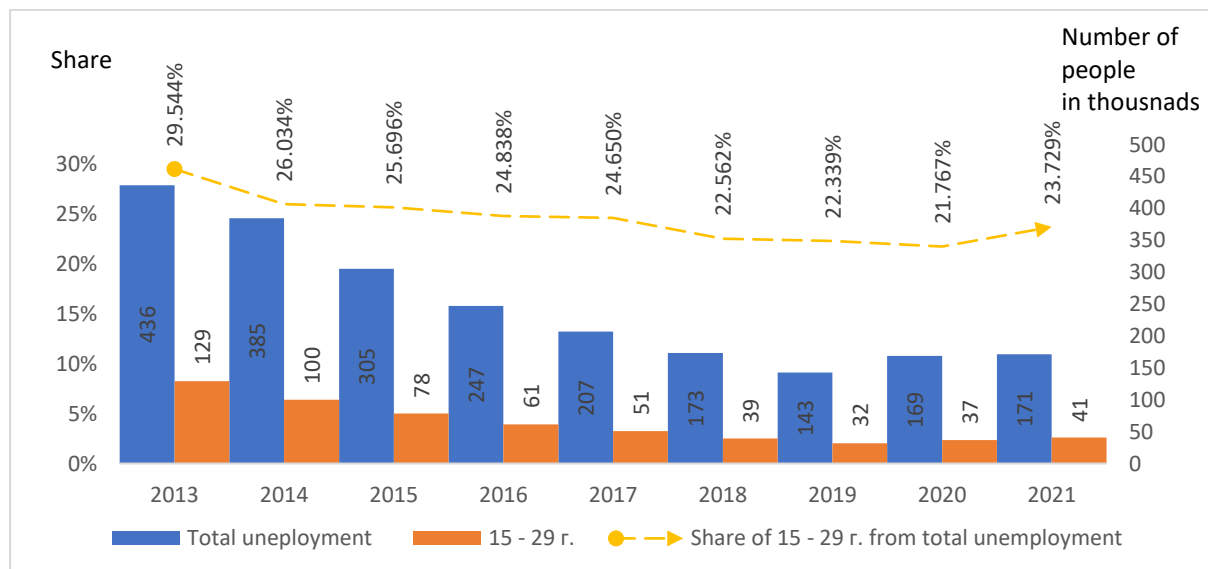


Source: NSI

**Figure 1.** Unemployment rate among young people aged 15-29

Due to the economic crises from 2008, unemployment rates from the discussed period amounted to 21.8. In 2014, the labor market in the country showcased signs of stabilization and youth unemployment, up to 2019, was going down with the lowest coefficient of 6.9%. The COVID-19 pandemic has had a direct effect in the increase of youth unemployment. The deteriorating economic situation in the nation increases the indicator by 3.5 percentage points up to 10.4%.

Young people are most often the first ones to be terminated from employment in times of an economic recession. This can be seen from the following graph which illustrates the percentage change in the number of unemployed people aged 15-29 as a part of all the unemployed people in the country. The Eurostat data indicates that in 2013, youth unemployment had reached close to 30% from the total number of people aged 15-74. These high numbers are due to the economic crisis from 2008 which has left its mark. The percentage gradually decreased to 22% in 2020 and increased to 24% in 2021.



Source: NSI

**Figure 2.** Percentage change in the number of unemployed people aged 15-29 as a part of all the unemployed people in the country

Youth unemployment began to rise further after 2019 and in 2020 their number increased by 15% compared to 2019. In 2021, compared to 2020, the percentage increased by another 11%. In total, assuming that the rise in youth unemployment is due to the effect of COVID-19, then we can say that the pandemic has caused an increase in the number of the unemployed by more than 1/4.

Despite the observed trends of declining unemployment over the last few years, a serious issue for young people in the labor market is “long-term unemployment” (Eurostat, Statistics Explained). The main problem with this age group is the negative influence on future employment opportunities (Gregg and Tominey, 2007). It is considered that if a young person has been unemployed for a longer period of time, that leaves a bad impression on future potential employers, mainly due to an insufficient amount of knowledge, skills, and work experience (Ryan, 2001).

**Forecast**

Based on the information on the unemployment rate from 2013 to 2021, a forecast of the coefficient for 2022 and 2023 will be made. As previously mentioned in the methodology section, this will be done on the basis of trend models. 10 trend models have been tested and their results are illustrated in Table 1

**Table 1. Model Summary and Parameter Estimates**

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.727	18.670	1	7	.003	19.867	-1.520		
Logarithmic	.900	63.345	1	7	.000	21.427	-6.440		
Inverse	.873	48.007	1	7	.000	7.240	15.991		
Quadratic	.987	222.485	2	6	.000	27.212	-5.526	.401	
Cubic	.993	247.056	3	5	.000	25.251	-3.649	-.045	.030
Compound	.711	17.216	1	7	.004	20.460	.891		
Power	.836	35.632	1	7	.001	22.623	-.476		
S	.757	21.856	1	7	.002	2.083	1.142		
Growth	.711	17.216	1	7	.004	3.018	-.115		
Exponential	.711	17.216	1	7	.004	20.460	-.115		

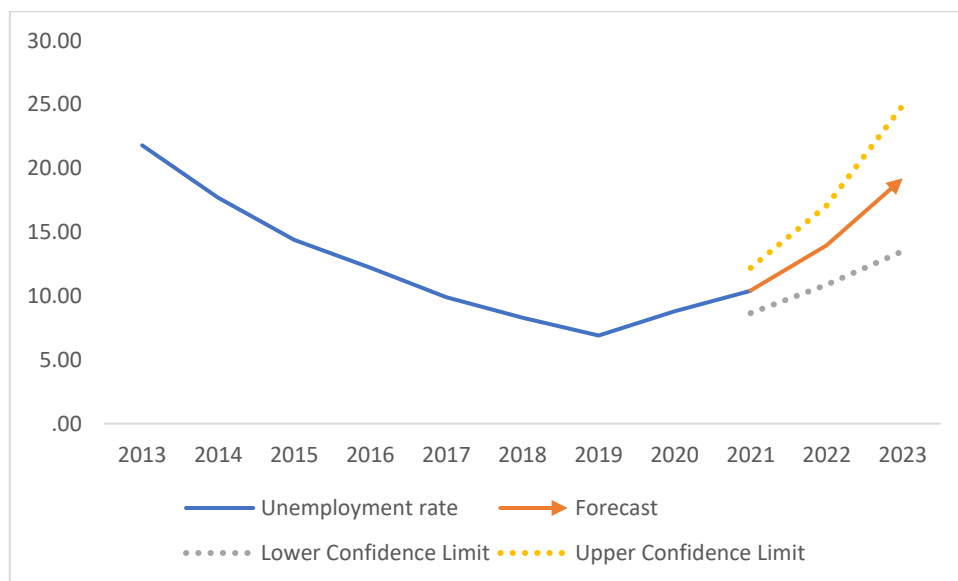
Source: Calculations by authors'

The cubic model is the most appropriate one to make a forecast on as it has the highest coefficient of determination (R Square = 0,993). This is what it looks like:

$$\hat{Y}_t = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 t^3$$

А оценената му форма е:

$$\hat{Y}_t = 25,25 - 3,65t - 0,05t^2 + 0,03t^3$$



Source: Calculations by authors'

**Figure 3. Forecast on youth unemployment for 2022 and 2023**

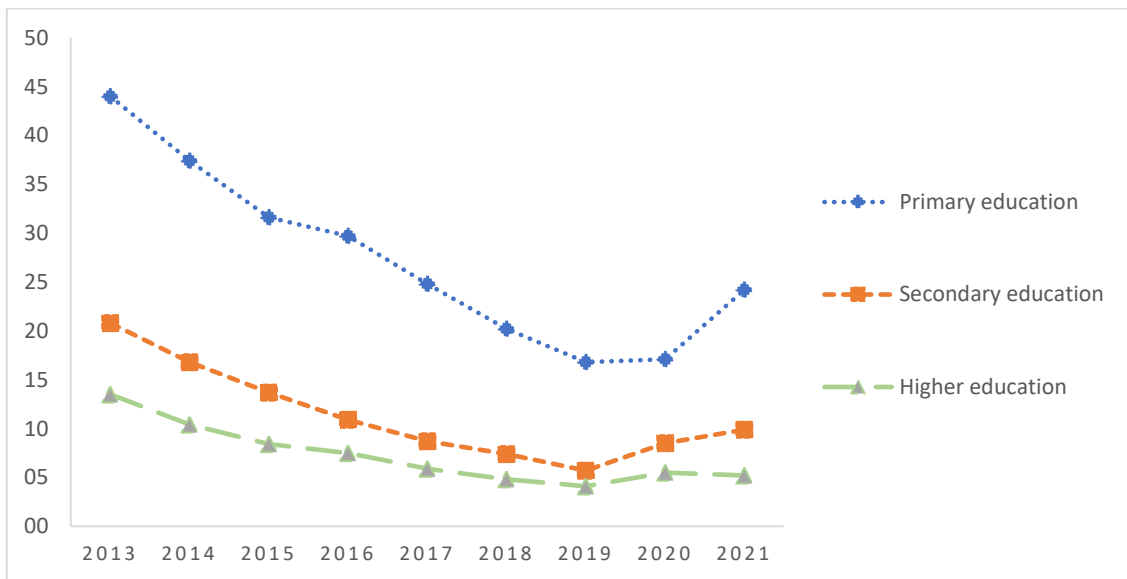
According to our forecast, the unemployment rate is expected to increase up to 14% in 2022. With a 95% probability, it can be stated that the coefficient will be between 11% and 17%. These

numbers will continue to rise in 2023 and will reach 19%. Once again, with a 95% probability, it can be stated that the coefficient will be between 14% and 25%. The width of the interval is not very informative due to the short length of the dynamic array. Despite this, the indications we have observed since the beginning of the year showcase that forecast will likely come true. A long-term forecast is not advisable as the economic situation is currently shifting at a rapid rate and other long-term forecasts would be untenable.

#### Analysis of unemployment rates among young people at certain educational levels

The data on the unemployment rate regarding young people who are at certain educational levels are also of great interest. Due to the aforementioned restrictions, the NSI does not maintain publicly available statistics regarding the work performance of people aged between 15-29. Therefore, we will once more use Eurostat statistics to analyze the unemployment at certain educational levels.

In the case of youth unemployment, the levels of education undoubtedly have an impact. The importance of education among youth unemployment can be seen in figure 4.



Source: Eurostat

**Figure 4.** Youth unemployment rate at different educational levels (15-29)

The highest percentage of unemployment can be found among young people who have the lowest possible degree of education. In 2013, it began at 44% and reached 16.8% before the pandemic (Eurostat). In 2020, there is a slight increase of the coefficient reaching 17.1% due to COVID-19, however, in 2021 it is much more tangible, reaching 24.2%. The lowest percentage of unemployment can be found among young people who have higher education. In the beginning of the period, the unemployment rate is 3.3 times lower (13.5%) in comparison to the young people who only have primary education. At the end of the period, the unemployment rate becomes 4.5 times lower (5.2%) among young people who have a Bachelor's degree, a Master's degree, and a PhD. What is more, this is the only educational level whose unemployment rate has started to rise in 2020 as a result of COVID-19 (from 4.1% to 5.5%), however, in 2021 it started to decrease from 5.5% to 5.2%). All other levels of education mark an increase after the pandemic.

## DISCUSSION AND CONCLUSIONS

In times of economic crises, one of the most logical reasons for an increase in unemployment among young people is the lack of job opportunities. A large part of the produce is reduced, which equates to job losses. In this case, young people are considered at risk and suffer the most in the labor market. According to our forecasts, the consequences of COVID-19 on the unemployment rate among young people are likely to increase over the next two years. What is more, the low level of education also contributes to this. According to the data for Bulgaria, in 2021 compared to 2019, unemployment among young people with primary and lower education has increased by 7.4%, with 4.2% among those who have acquired secondary education, and only with 1% among those with higher education. The analysis shows that young people in Bulgaria with higher education are at a considerably lower risk during the

COVID-19 pandemic in comparison to those with lower education. In addition, for the individuals with a low level of education, the salary for their work is lowered, close to minimum wage, which naturally leads to a lower standard of living. In general, these young people often become directly dependent on the social benefits of the Social Welfare System and thus fall into another group connected to the phenomenon known as the “welfare trap”.

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