

YOUTH UNEMPLOYMENT AND EMPLOYMENT RATES IN THE EUROPEAN UNION COUNTRIES AND ITS RELATIONSHIP WITH GOVERNMENT EXPENDITURE LEVEL AND STRUCTURE

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Abstract

The article presents the evaluation of the impact of selected categories of public expenditure in the European Union countries on the rate of employment among the youth aged 20-29.

The public expenditures taken into consideration are the ones measured in the percentage of GDP related to education, social protection, health and general public services, according to the Classification of the Functions of Government used by Eurostat. In the area of education expenditures, a division has been made into pre-primary and primary, secondary and tertiary education, as well as subsidiary services to education and education not elsewhere classified (n.e.c.). The subcategories in the area of social protection expenditures are social protection n.e.c., unemployment and social exclusion n.e.c.

In order to identify the factors which influence the rate of employment, an econometric model for panel data was prepared. Five independent variables have been demonstrated as influential on the rate of youth employment, namely the public expenditure on pre-primary and primary, secondary and tertiary education as well as expenditures on health and public exclusion (n.e.c.). The factors which had a significant, and at the same time negative influence on the shape of dependent variable are subsidiary services to education and general public services.

Key words: employment, public expenditure, panel data models

JEL Code: J64, H50, C23

Introduction

Creating conditions which would ensure quick and long-lasting entrance of youth into the labor market is an important social, economic and political challenge for European Union countries. The consequences of financial crisis from 2008 for the situation of youth on the

labor market, especially in the countries of Southern Europe, are still noticeable (Bruno et al., 2017). Appropriate use of public funds may turn out to be crucial for tackling this problem (Sironi, 2018).

The youth employment rate in the age group 20-29, regardless of the education level, is an interesting topic of studies due to the fact that it allows to go beyond methodological limitations concerning both constituent age groups. In the case of age group 20-24, the image could be blurred as a result of including the people who continue education at the tertiary level. In contrast, an analysis of the rate of employment within the 25-29 age group does not take into account those youth who completed their education at an earlier age (Sironi, 2018). It should be noted, however, that a full analysis of the factors which might shape the situation of youth on the labor market requires something more than a review of the influence of those factors in the context of the rate of employment within this age group. Also the rate of unemployment itself (Bruno et al., 2017), and even the percentage of young people neither in employment nor in education and training (Mourshed et al., 2012) should be examined. Although there is no data available concerning the latter aspect for the studied age group, in 2016 in the group of youth aged 20-24 throughout the whole European Union as many as 16.7% of the population were neither in employment nor in education and training. Due to the complexity of those issues, this article will be devoted to the factors which determine the rate of employment among the youth, and the authors' intention is to analyze the remaining two aspects in subsequent articles.

The aim of this paper is to evaluate the influence of selected categories of public expenditure in European Union countries on the employment rate of youth aged 20-29.

1 Mechanisms of influence of selected categories of public expenditure on the employment rate of youth aged 20-29 in the European Union

Public expenditures on particular levels of education measured with their share in GDP have positive influence on the rate of employment of youth aged 20-29 (Annabi et al., 2011). Better financing of education allows for better preparation of youth to the needs of the labor market, providing not only better education but also flexibility in seeking employment (Annabi, 2011). A special role is played by the quality of secondary and tertiary education, for a number of reasons. Firstly, it is the stage of education at which primary education gaps and errors can be corrected. Secondly, most youth complete their education at the secondary level and enters the labor market then (Mourshed et al., 2012). Thirdly, it is the knowledge and

skills acquired in the course of secondary education that define the youth's ability to continue education at the tertiary level and form a base for proper acquisition and later usage of the knowledge offered by universities (Blankenau & Simpson, 2004).

The name of expenditure subcategory 'Subsidiary services to education' implies a positive influence on youth employment rate, just like the spending on particular education levels. However, it also includes the expenditure on administration and inspection, at the same time excluding such positions as scholarships, grants, loans and allowances in cash to defray the costs of subsidiary services. Within this category such learning-enhancing services as operation or support of transportation, food and lodging are financed. Its impact is thus dependent on the actual proportions between administrative expenses, and ones related to direct services.

Devoting a sufficient part of GDP within public expenditure on healthcare in a given country means that it becomes an important area of economy, which consequently generates a pool of jobs (OECD, 2017). In addition, one should bear in mind that in the COFOG classification public expenditure on specialized healthcare and dental care for those in education are distinguished in the 'Subsidiary services to education' subcategory, within the 'Education' category. In this context, significant financing of the whole 'Health' category can influence the rate of youth employment both directly and indirectly (US National Center, 2017b). Directly – by improving the usefulness for the labor market by maximizing the physical and mental capacity of youth, and indirectly – by improving the health of other family members, which allows for involving young people in professional work more effectively (US National Center, 2017a).

The scale of public financing of social protection may not translate directly into the level of youth employment for a number of different reasons. According to the Eurostat data, in recent years over 95% of expenditure on social protection were various forms of benefits, including unemployment benefits, reskilling benefits etc., whose growth is a consequence of the absorption capacity constraints of the labor market. They are included into the 'Unemployment' subcategory. Apart from that social systems whose structure is faulty from the motivational point of view, taking advantage of social protection benefits is the youth's source of income which is an alternative to the labor market, thus reducing their interest in professional work (Savage et al., 2014).

Public expenditures on tackling social exclusion as part of social protection are aimed at financial and material support and restoring the proper functioning within a society of those individuals who are destitute, low-income earners, immigrants, indigenous people, refugees,

alcohol and substance abusers, victims of criminal violence, etc. Due to the fact that, apart from the people past the working age, it is the youth which are especially exposed to the abovementioned threats, appropriate funds for reduction of social exclusion naturally increases their chances to obtain education and maintaining the ability to work (Axelrad et al., 2018).

Consequently, increased funds of mostly administrative and organizational character for the functioning of the public authorities apparatus, as in the COFOG functions of ‘General public services’ and ‘Social protection n.e.c.’, should not have significant impact on youth employment rate (Castro, 2018). Especially in the periods of low economic prosperity and limited resources the ‘General public services’ function even competes for financing with the abovementioned functions, which contribute to the improved youth access to the labor market. The ‘Social protection n.e.c.’ function first of all stabilizes the society’s income-related situation in the face of threats other than unemployment and social exclusion.

2 Materials, methods and model

In order to identify the factors influencing the youth employment rate (people aged 20-29 in the countries of European Union) an econometric model for panel data was constructed. The independent variables were selected categories of public expenditures in particular EU countries in years 2007-2016. In the set of independent variables, the ones referring to general government expenditure on pre-primary, secondary and tertiary level of education along with subsidiary services to education and education not elsewhere classified. In addition, public expenditures on health, social exclusion, unemployment, social protection not elsewhere classified and general public services were taken into consideration.

The following research hypothesis has been verified:

H1: The rate of employment among the youth aged 20-29 in European Union states grows along with an increase in the share of public expenditure in GDP on all three levels of education.

The following hypothetical form of model has been proposed, which would take into account the main factors influencing the rate of youth employment:

$$YTH_EMPL_{jt} = \alpha_0 + \alpha_1 HEALTH_{jt} + \alpha_2 PRI_EDU_{jt} + \alpha_3 SEC_EDU_{jt} + \alpha_4 TERT_EDU_{jt} + \alpha_5 SUB_EDU_{jt} + \alpha_6 EDU_NEC_{jt} + \alpha_7 SOC_PROT_NEC_{jt} + \alpha_8 UNEMPL_{jt} + \alpha_9 PUB_EX_{jt} + \alpha_{10} PUB_SER_{jt} + v_{jt} \quad (1)$$

$$v_{jt} = e_t + u_j + \varepsilon_{jt}, \quad (2)$$

Table 1 presents a detailed description of particular variables. The source of data is the Eurostat database.

Tab. 1: Variables used in empirical investigation

Variables	Variables description
<i>YTH_EMPL_{jt}</i>	Youth employment, age from 20 to 29 years, all ISCED 2011 education levels, in % (Eurostat code: yth_empl_010)
Explanatory variables – expenditure by COFOG* function in % of GDP	
<i>HEALTH_{jt}</i>	Health
<i>PRI_EDU_{jt}</i>	Pre-primary and primary education
<i>SEC_EDU_{jt}</i>	Secondary education
<i>TERT_EDU_{jt}</i>	Tertiary education
<i>SUB_EDU_{jt}</i>	Subsidiary services to education
<i>EDU_NEC_{jt}</i>	Education n.e.c. (not elsewhere classified – not mentioned in subcategories)
<i>SOC_PROT_NEC_{jt}</i>	Social protection n.e.c.
<i>UNEMPL_{jt}</i>	Unemployment
<i>PUB_EX_{jt}</i>	Social exclusion n.e.c.
<i>PUB_SER_{jt}</i>	General public services
<i>v_{jt}</i>	The random error in the object <i>j</i> , in the time period <i>t</i> , which consists of the following components: <i>e_t</i> – impulses affecting all observations in the time period <i>t</i> , <i>u_j</i> – impulses affecting all the observations in the object <i>j</i> , <i>ε_{jt}</i> – impulses affecting only observations in the object <i>j</i> , in the time period <i>t</i> .

* the general government expenditure broken down by function according to the Classifications of the Functions of Government (COFOG) (Eurostat code: gov_10a_exp).

For full descriptions of functions considered as variables by COFOG see:

<https://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=4>

Source: elaborated by the authors.

3 Results and Discussion

In this study, for the purpose of describing the dependences between public expenditures and employment of youth aged 20-29 in European Union states a panel model was used, described with the Formula (1). The data were collected for 28 EU countries. They concern a 10-year period (annual data for years 2007–2016).

Table 2 below compares the average youth (aged 20-29) employment and unemployment rates in particular EU countries.

In years 2007–2016 the average employment rate among the youth (i.e. aged between 20 and 29) in 28 EU countries was 62.06%. The lowest youth employment rate (below 50%) in the analyzed period was observed in Italy and Greece. The highest youth employment rate (over 70%) was observed in the Netherlands, Malta, Austria, the United Kingdom, Denmark and Germany (European Commission, 2017). On the other hand, the average unemployment

rate among the studied age group in 28 EU countries was 14.91% in the analogous period. The highest youth unemployment rate (over 20%) was observed in Greece, Sweden, Croatia, Italy, and the United Kingdom. The lowest youth unemployment rate (below 8%) during the analyzed period was noted in Poland, the Netherlands, Malta, Austria and Germany.

Tab. 2: Average youth (aged 20-29) employment and unemployment rates in the EU countries (data for 2007–2016)

Country	Average employment rate (in %)	Average unemployment rate (in %)	Country	Average employment rate (in %)	Average unemployment rate (in %)
Austria	74.04	7.12	Italy	45.95	21.71
Belgium	60.26	14.00	Latvia	63.52	16.27
Bulgaria	53.52	14.28	Lithuania	58.97	15.48
Croatia	53.07	22.91	Luxembourg	60.74	9.84
Cyprus	66.13	16.35	Malta	75.03	6.77
Czech Republic	60.59	9.27	Netherlands	78.36	6.15
Denmark	71.31	9.37	Poland	60.33	5.82
Estonia	64.37	12.59	Portugal	60.02	14.95
Finland	67.65	12.04	Romania	54.42	19.34
France	62.38	15.70	Slovakia	55.53	13.02
Germany	70.37	7.94	Slovenia	61.63	18.39
Greece	46.94	32.07	Spain	53.26	14.33
Hungary	54.18	14.22	Sweden	69.01	29.61
Ireland	63.70	16.18	United Kingdom	72.29	21.71

Source: own calculations based on Eurostat data.

The panel data model (1) was estimated with the use of GRETL (*GNU Regression Econometrics Time-Series Library*) software. The choice of estimation method was made based on the decision-making procedure proposed by subject literature of econometrics (Baltagi, 2001). Firstly, a simple panel model (without individual effects) was estimated by means of the classical least squares method, which was followed by the model's diagnostic tests (Huterska&Zsunek-Rosa, 2017). The following values of test statistics have been obtained: *Wald* test ($F=19.0885$; $p - value \approx 0.0000$), *Breusch-Pagan* test ($LM=320.823$; $p - value \approx 0.0000$) and *Hausman* test ($H=38.835$; $p - value \approx 0.0000$).

When analyzing the Wald test results one can conclude that the appropriate model describing the dependencies between public expenditures and the employment rate among the youth (aged 20-29) is a Fixed Effects Model (FEM). The Breusch-Paga test results indicate that a better solution would be a Random Effects Model (REM). Finally, the Hausman test results allow for concluding, with the risk of error at the level of 0.05 ($\alpha = 0.05$), that for the purpose of describing the studied dependence the Fixed Effects Model is the appropriate one. Further analysis of the model's properties, however, has confirmed the heteroskedasticity of

the random factor. To remove this flaw, in order to estimate the model's parameters the Weighted Least Squares (WLS) method was used.

Table 3 presents the results of estimation of the above model.

Tab. 3: Results of model estimation by means of WLS

Dependent variable YTH_EMPL_{jt}					
Independent variables	Coefficient	Std. Error	<i>t</i> -ratio	<i>p</i> -value	Significance ^{a)}
Constant	54.3651	1.7433	31.180	<0.00001	***
$HEALTH_{jt}$	0.5106	0.2014	2.535	0.0118	**
PRI_EDU_{jt}	2.1165	0.5110	4.142	<0.00001	***
SEC_EDU_{jt}	3.4932	0.6653	5.250	<0.00001	***
$TERT_EDU_{jt}$	1.8216	0.6927	2.630	<0.00001	***
SUB_EDU_{jt}	-7.3330	1.3628	-5.381	<0.00001	***
PUB_EX_{jt}	6.0546	0.6652	9.102	<0.00001	***
PUB_SER_{jt}	-1.5098	0.1736	-8.694	<0.00001	***
Observations	280				
Standard error of residuals	0.998108				
R ²	0.582749				
Adjusted R ²	0.572011				
F (7, 272) = 54.2694	<i>p</i> -value for test F < 0.00001				

^{a)}*** The statistically significant variable at the level of 1% ; ** at the level of 5%.

Source: the author's own calculations.

The estimated model is statistically correct. From among ten potential independent variables, as many as seven have turned out to be statistically significant. All the obtained signs of structural parameters' evaluations next to the independent variables are in line with the theoretical assumptions.

The obtained results allow to conclude that five independent variables has a positive influence on the dependent variable (i.e. the youth employment rate). Among those variables there are: public expenditure on health ($HEALTH_{jt}$), expenditure on education on all analyzed levels (variables: PRI_EDU_{jt} , SEC_EDU_{jt} , $TERT_EDU_{jt}$), and public expenditure on reducing social exclusion (PUB_EX_{jt}). Interpretation of parameter evaluation in the case of a particular variable is relatively simple. For instance, the parameter evaluation of the SEC_EDU_{jt} variable (3.4932) should be interpreted as follows: if the public expenditure on secondary education (measure in relation to GDP) grow by 1 percentage point, then the youth employment rate will consequently grow by, on average, about 3.49 percentage points, if one assumes constant values of the remaining variables. The study confirms that the factors which significantly, and at the same time negatively, influence the dependent variable are subsidiary services to education (SUB_EDU_{jt}) and general public services (PUB_SER_{jt}). As noted above,

within the public expenditures for those purposes expenses of administrative and organizational character play a significant role. They can act as a position in expenditure which will serve as competition to those which directly influence youth employment rate. In the estimated model, the variables which have turned out to be statistically insignificant were EDU_NEC_{jt} , (education n.e.c.), $SOC_PROT_NEC_{jt}$ (social protection n.e.c.) and $UNEMPL_{jt}$ (unemployment).

Conclusion

For countries which are increasingly affected by demographic problems, especially by society ageing, effective use of the human capital provided by working-age youth for the benefit of the economy poses a serious challenge. It is even more difficult due to the fact that various types of expenditure compete with one another for limited public funds. Priority should thus be given to those types of public expenditure which significantly increase the youth employment rate. The purpose of this article was to evaluate the influence of particular categories of public expenditures in EU countries on the rate of employment among the youth aged 20-29.

The study results have confirmed the research hypothesis, according to which the rate of employment among the youth aged 20-29 in the European Union countries grows along with an increase in the share of public expenditure on all three levels of education in the GDP. Also a growing share of expenses on health and social exclusion in GDP contributes to increased youth employment rate. A negative influence on the youth employment rate was noted for the share of expenses on subsidiary services to education and general public services in GDP.

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