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**DETERMINING YOUTH UNEMPLOYMENT IN EUROPE
BY ANALYZING PUBLIC EXPENDITURE IN LABOUR
MARKET POLICIES**

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DETERMINING YOUTH UNEMPLOYMENT IN EUROPE
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ABSTRACT

Differences between youth and adult unemployment rates indicate especially inefficient institutional frameworks regarding the youth unemployment issue, which additionally deepens the future perspectives of economic growth and well-being. In this paper, we investigate the impact of selected macroeconomic, demographic, institutional and other determinants on youth unemployment rates in Europe.

We developed a baseline model consisting of youth unemployment rates as a dependent variable and two fixed independent variables (public expenditure in labour market policies and the macroeconomic situation). We find public expenditure in labour market policies has statistically significant impact on youth unemployment rates, but with negative coefficients, indicating rising youth unemployment rates when investing more in employment policies. The main macroeconomic variables (lagged GDP growth and inflation rates) are used in all models. They proved as statistically significant, with negative coefficients, indicating favourable impacts on reducing youth unemployment rates. Most other control variables chosen in our models also indicate statistically significant impact on youth unemployment rates.

Keywords: *labour market, public expenditure, youth unemployment, Europe*

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1 INTRODUCTION

Unemployment rates vary across European countries, both within the EU and beyond, with the young population being specially endangered. The macroeconomic situation may be accountable only for part of the problem. There are also many differences between other factors determining youth readiness for the labour market (including educational framework, cultural factors, business start-up flexibility and other institutional and regulatory issues), employment possibilities, rights and regulations and unemployment issues and conditions important for job searching intensity or deciding upon staying in and exploiting unemployed status.

For example, research indicate that higher economic activity rates in the 'core' regions of the EU enable young people to find suitable job, replace occupation or advance easier than in the 'European periphery', thus consequently causing even broader gap between EU Member States and/or regions with higher and weaker economic and demographic prospects.

Migrations and the freedom of mobility significantly affect the labour market. Outward mobility can reduce unemployment, especially among the younger generations, but can also cause severe economic and social problems in the future. As seen in many new EU Member States and more recently the Mediterranean Member States, which experienced the negative effects of the big recession more intensively, prospects for jobs in wealthier and more dynamic economies attract flexible and skilled workers, especially if these targeted immigration countries can assure better conditions for young families. However, if this trend ends up in a classical 'brain drain' and 'youth drain', it will surely endanger even more the future capacities for population growth, creativeness and innovativeness, as well as the production and consumption capacity of a given economy. Certainly, its growth and development would be strongly affected.

Increasing professional skills and knowledge capacities among young Europeans will surely create conditions for driving new, creative and harmonious economic conditions, which will be adaptable to ever faster changing global trends and threatening challenges. Therefore, there is a need for an improved legal, institutional and educational framework, which includes better laws, policies, programmes and other instruments aiming at the reduction of poverty and social exclusion (including 'generalized'/European and 'specific'/national solutions). This is especially true for deindustrialised and depopulated peripheral regions of Europe.

The purpose of this paper is to explore how efficient is public spending in labour market policies, and how does it affect youth unemployment. The structure of this paper stresses primarily the idea of the affirmation of specific determinants that have clear influence on the youth unemployment rates in Europe. Therefore, after the introduction section, which gives a broader perspective on the important issue of youth unemployment and its potential negative effects on European youth and the overall European economy, the second section describes the theoretical frameworks that taken into consideration while preparing and executing the analytical research of the issue. The third section brings a concise display of the current trends in youth (un)employment, while the forth section represents the main analytical part, which includes the explication of the statistical regression outputs which were investigated during the research process. Finally, the conclusion section brings the major findings and interpretations of the results alongside with the main suggestions of the authors.

2 THEORETICAL BACKGROUND

Persistent high unemployment among young people is a societal and economic problem that becomes more burdensome with the ever faster changing globalized world. National and supranational policies have to be designed in a way to actively and comprehensively fight this problem. Understanding the specifics of youth unemployment can give a better perspective on how to untangle it.

2.1 WHAT IS YOUTH UNEMPLOYMENT?

The first issue concerns the definition of '*youth unemployment*'. Usually it refers to the level of unemployment among young people aged 15-24 years, the age group that represents mostly high school

youngsters and students. However, the rate of unemployment takes into account only those who finished schooling and search for a proper job. However, a new indicator has been used more often in recent years: '*Neither Employed nor in Education or Training*' (NEET). In most countries, this indicator vary substantially, indicating a different status for the younger generations in particular countries.

The youth not in education, employment or training is at a much higher risk of remaining such, consequentially experiencing poverty and social exclusion (European Commission, 2011). Choudhry et al (2012) accentuate how the OECD has also introduced new categories such as the '*poorly integrated*' and the '*left behind youth*' to address specific groups which represent those who have unstable job positions resulting in a frequent transition between temporary jobs and inactivity, and those who face long-term unemployment, which is also a rising problem in Europe. Thus, part of the problem lies in labour market policies that do not address youth unemployment specificities adequately and do not treat them separately from other types of unemployment. For example, while trying to enter the job market as entrepreneurs, they are usually not able to afford the low paid and irregular working hours, especially in early stages of micro-enterprise establishment (European Foundation for the Improvement of Living and Working Conditions, 2009).

2.2 HOW YOUTH UNEMPLOYMENT 'HURTS' ECONOMIES?

As Choudhry et al (2012) clearly suggest, unemployment represents a waste of resources and potentially decreases the GDP, causing the loss of human capital, well-being and even health. Its fiscal effect (unemployment benefit expenses as well as loss of an employment tax, etc.) represents a clear burden to already weakened economies, which lack investments into propulsive industries and adequate education systems with effective transitional mechanisms for the inclusion of younger generations into the labour market. Thus, indebted economies have limited funds for improving social conditions, which can also endanger motivating aspects of working and private life in a certain country or region. These authors elevate the problem of youth unemployment stressing the fact that it usually represents freshly invested human capital that does not contribute to the economy and almost certainly loses its value with the exclusion from the labour market.

Bell and Blanchflower (2009) state that long-term unemployment (LTU), defined as unemployment with duration longer than 12 months, is a major concern for young people since it has a deep impact on their personal development along with an impact on the societies where these young people live. In other words, LTU can have a profound effect on employability and career development in the medium to long-term, consequentially deepening the youth unemployment crisis in the next two decades. The labour market has also changed in the past two decades, augmenting its demands of globalisation by moving to high-skilled and service-based economy and workforce in Europe, affecting particularly young people (CEDEFOP, 2012).

2.3 DETERMINANTS OF YOUTH UNEMPLOYMENT RATES

Numerous papers investigate the impact of different factors on youth unemployment (Mroz and Savage, 2006; Choudhry et al, 2012; Caliendo et al, 2011; Eichhorst et al, 2013; Molloy et al, 2016; Tomić, 2016). For instance, Choudhry et al (2012) demonstrate how wrong policies and ineffective institutions aggravate unemployment in the European example. Their results suggest that high interest rates, taxes, labour and unemployment benefits unfavourably affect the employment levels. Furthermore, they suggest that general unemployment rates and youth unemployment rates are significantly different, which can be observed also by comparing the effects of recessions and financial crises on differentiated total and youth unemployment rates. Younger workers bear the burden because of weaker employment contracts, lower qualifications and less experience.

Lack of labour demand, inadequate workers' skills, institutional factors such as Employment Protection Legislation, labour taxation and other factors are often cited as causes of unemployment or inactivity. Empirical evidence suggest total unemployment rates are higher on regulated (France, Spain, Italy etc.) compared to more liberal labour markets (USA, UK, Switzerland etc.), which also seems to be the case

with youth unemployment rates due to weaker employers' possibilities to dismiss young unsuitable workers (Breen, 2005).

Empirical evidence from several research papers indicate that high unemployment rates can be reduced with economic growth, labour market reforms and emboldened economic freedom (which contributes to competitiveness and sectoral and production adjustments). In this respect, macroeconomic conditions and business cycles usually are investigated through GDP growth rates, inflation rates, long-term interest rates, productivity growth, output gap etc. Demographic factors influencing unemployment relate to population growth and density, migrations, shares of specific age (or sex) groups, average age of youth emancipation and similar.

Considering institutional factors influencing youth unemployment, important elements include 'flexibilisation' of the labour market (eg. 'part-time' employment, less rigid labour laws...) and active labour market policies. Studies show that 1 in 5 young people fear losing their jobs (Eurofound, 2010) due to the uncertain jobs and contracts; 42% of which young adults have a temporary contract versus only 11% among adult workers (European Trade Union Institute, 2012). Other relevant variables include unemployment benefits, collective bargaining and union density (or coverage), the minimum wage, housing policies etc.

Active Labour Market Policies (LMP) had become a major instrument addressing unemployment issues. They are very different between different countries, with disparate results. Often they depend on the national welfare systems, their political environments and even globalisation repercussions (in recent decades), but they tend mostly to be centred on human capital investments and occupations (Bonoli, 2010). Although, new problems and trends resulted in less costly LMP measures to be applied in many European states.

Expenditure in LMP is aimed at reaching its efficient functioning as well as correcting disequilibria, which can be distinguished from other general employment policy interventions. Expenditure in LMP is explicitly targeting groups of persons with difficulties in the labour market: unemployed, employed at risk of involuntary job loss and inactive persons who would like to enter the labour market. According to EUROSTAT (2017), total LMP expenditure is broken down into LMP services (activities of the public employment service and similar), LMP measures (training, job rotation and job sharing, employment incentives, direct job creation, start-up incentives...) and LMP supports (financial assistance that aims to compensate individuals for loss of wage or salary, or which facilitates early retirement). Table 1 presents figures related to the public expenditure in LMP in various European countries as a percentage in GDP.

Table 1. Public expenditure in Labour Market Policies (as % of GDP) in EU Member States and Norway

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
BE	2.93	2.769	2.599	2.641	3.05	2.968	2.878	2.829	2.803	2.68
BG	0.654	0.56	0.452	0.431	0.608	0.557	0.556	0.66	0.803	0.621
CZ	0.451	0.452	0.427	0.401	0.679	0.668	0.528	0.476	0.543	0.594
DK	3.654	3.12	2.594	2.391	3.153	3.645	3.515	3.485	3.486	3.379
DE	3.032	2.563	2.034	1.885	2.449	2.176	1.759	1.618	1.643	1.595
EE	0.186	0.15	0.147	0.275	1.584	1.072	0.711	0.719	0.675	0.593
IE	1.446	1.459	1.551	2.017	3.272	3.657	3.275	3.232	2.961	2.609
GR	0.465	0.52	0.491	0.606	0.9	0.945	.	.	0.849	0.858
ES	2.087	2.114	2.122	2.53	3.676	3.882	3.611	.	3.382	2.991
FR	2.893	2.695	2.501	2.332	2.835	2.984	2.737	2.802	2.911	3.007
HR	.	.	.	.	.	.	.	0.642	0.708	0.618
IT	1.169	1.084	0.99	1.105	1.629	1.662	1.578	1.867	1.888	1.876
CY	.	0.677	0.539	0.507	0.806	0.917	1.191	1.331	1.509	1.069
LV	0.508	0.508	0.428	0.454	1.329	1.26	0.696	0.499	0.552	0.55
LT	0.337	0.387	0.408	0.389	0.899	0.775	0.551	0.471	0.462	0.428
LU	1.12	1.038	0.949	0.95	1.353	1.281	1.201	1.334	1.391	1.316

HU	0.706	0.689	0.698	0.708	1.141	1.344	1.082	1.08	1.116	1.122
MT	.	0.526	0.477	0.474	0.491	0.495	0.501	0.526	0.486	0.501
NL	2.919	2.522	2.136	1.984	2.484	2.554	2.384	2.492	2.782	2.805
AT	2.069	2.041	1.851	1.776	2.251	2.186	1.981	1.978	2.161	2.209
PL	1.28	1.158	1.005	0.903	0.949	1.016	0.704	0.752	0.836	0.789
PT	1.862	1.696	1.484	1.465	1.978	1.981	1.839	2.08	2.132	1.877
RO	0.537	0.416	0.339	0.262	0.444	0.591	0.359	0.282	0.251	0.224
SI	0.687	0.647	0.491	0.44	0.981	1.192	1.26	1.125	1.21	1.002
SK	0.593	0.642	0.574	0.679	0.911	0.916	0.776	0.682	0.624	0.552
FI	2.651	2.466	2.174	2.038	2.621	2.667	2.354	2.351	2.576	2.84
SE	2.281	2.135	1.626	1.333	1.734	1.825	1.726	1.874	1.991	1.914
UK	0.589	0.485	0.458	0.521	0.732	0.685	.	.	.	.
NO	1.221	0.861	0.745	0.666	0.992	1.095	0.965	0.87	0.835	0.882

Notes: BE – Belgium; BG – Bulgaria; CZ – Czech Republic; DK – Denmark; DE – Germany; EE – Estonia; IE – Ireland; GR – Greece; ES – Spain; FR – France; HR – Croatia; IT – Italy; CY – Cyprus; LV – Latvia; LT – Lithuania; LU – Luxembourg; HU – Hungary; MT – Malta; NL – The Netherlands; AT – Austria; PL – Poland; PT – Portugal; RO – Romania; SI – Slovenia; SK – Slovakia; FI – Finland; SE – Sweden; UK – United Kingdom; NO – Norway.

Source: Eurostat (2017). European Commission - Directorate general for employment, social affairs and inclusion (DG EMPL)

In 2014, the EU average expenditure in LMP measures amounted to 1.91% of GDP, with basically 40% of them being ‘active’ and 60% being ‘passive’ measures (i.e. *out-of-work income*). Among other relevant OECD countries, the Canada recorded 0.91, the United States 0.71 and Japan only 0.62% of their GDP related to LMP measures (Hörisch et al, 2014). Analysis that is more comprehensive usually includes figures on active policy measures per person unemployed relative to average earnings, or the number of participants on active programmes relative to the size of the labour force (Martin, 2000). As Schömann (1995) points out, several macroeconomic analyses conducted during the early 1990ies suggested that active LMP’s are particularly efficient when the economy is about to leave a recession. Thus, considering LMP measures at this moment is very important for addressing youth unemployment. As widely assumed, a Polish study revealed that a young person has much higher chances of finding employment, especially if not seeking it at that moment, if he/she goes through training programmes (Styczyńska, 2013). Adequate education/training systems clearly empower young people to acquire needed skills and knowledge for the labour market. Thus, it is crucial to encourage the convergence between the labour supply that derives from the institutions providing education/training services and the labour market in order to reduce the labour market miss-match. Breen (2005) stipulates that lower youth unemployment rates have been indeed recorded in countries with good links between the educational system and the labour market resulting in employers understanding better competences of new graduates and thus having more realistic expectations resulting in more accurate matchings of labour demand and supply (Breen, 2005).

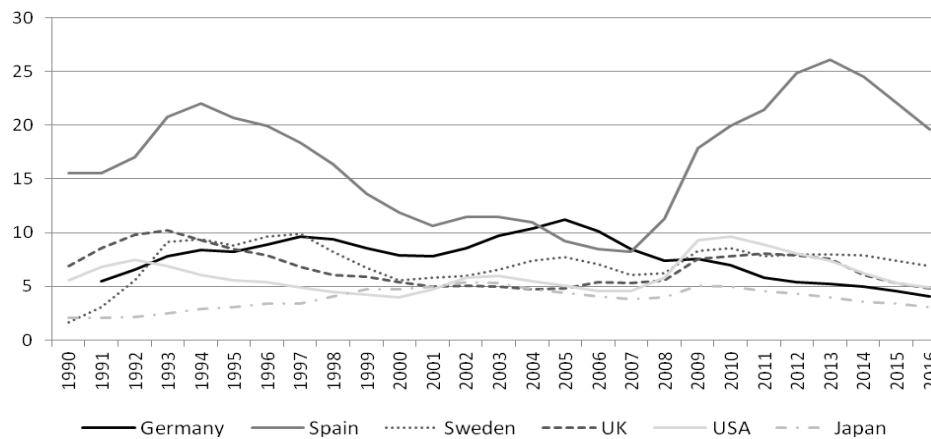
Additionally, structural factors influencing youth unemployment can be diminished by implementing various political strategies to lower the share of early school leavers, to offer more jobs specifically to early school leavers, to improve rehabilitation opportunities or to provide more job opportunities for young people with health impairments, to provide a training guarantee programme, to educate youth on their sexual health to prevent early involuntary pregnancies, and to provide better childcare provision (Bacher et al, 2013).

3 TRENDS IN EU UNEMPLOYMENT STATISTICS

Unemployment is a crucial problem of Europe today, and especially during recession periods, and especially in particular structurally ‘weaker’ economies (Figure 1). Compared to the USA and Japan, most EU Member States (for instance, Spain) experienced higher unemployment rates during the last few

decades, which could be the result of specific economic and structural conditions, as well as the result of specific institutional/legal frameworks (including education systems and specific policies). Although the EU has set up specific strategies and instruments to help its Member States in reducing unemployment and creating new skills and jobs, the main liability still lies within the national regulation and financial incentives.

Figure 1. Total Unemployment trends in the Europe, USA & Japan (% of active population 15-74)



Source: Eurostat (2017). Employment and unemployment; (LFS) Database

The following tables (Table 2 and 3) show the main unemployment figures in the European Union by each country. The youth unemployment issue in Europe becomes more evident with the following display of unemployment rates, which accentuate very high levels of unemployment during the last decade, reaching more than 40% (sometimes even more than 50%) among the youth in Southern European Member States.

Table 2. Total Unemployment and youth unemployment trends in the EU

	Total unemployment rate (% of active population; 15-74 y.o.)					Youth unemployment rates (15-24 y.o.; %)				
	2007	2010	2013	2014	2015	2007	2010	2013	2014	2015
EU28	7.2	9.6	10.9	10.2	9.4	15.5	21.0	23.7	22.2	20.3
BE	7.5	8.3	8.4	8.5	8.5	18.8	22.4	23.7	23.2	22.1
BG	6.9	10.3	13	11.4	9.2	15.1	21.9	28.4	23.8	21.6
CZ	5.3	7.3	7	6.1	5.1	10.7	18.3	19.0	15.9	12.6
DK	3.8	7.5	7	6.6	6.2	7.5	14.0	13.1	12.6	10.8
DE	8.5	7	5.2	5	4.6	11.9	9.8	7.8	7.7	7.2
EE	4.6	16.7	8.6	7.4	6.2	10.1	32.9	18.7	15.0	13.1
IE	4.7	13.9	13.1	11.3	9.4	9.1	27.6	26.8	23.9	20.9
GR	8.4	12.7	27.5	26.5	24.9	22.7	33.0	58.3	52.4	49.8
ES	8.2	19.9	26.1	24.5	22.1	18.1	41.5	55.5	53.2	48.3
FR	8	9.3	10.3	10.3	10.4	18.8	22.5	24.1	24.2	24.7
HR	9.9	11.7	17.3	17.3	16.3	25.2	32.4	50.0	45.5	43.0
IT	6.1	8.4	12.1	12.7	11.9	20.4	27.9	40.0	42.7	40.3
CY	3.9	6.3	15.9	16.1	15	10.2	16.6	38.9	36.0	32.8

LV	6.1	19.5	11.9	10.8	9.9	10.6	36.2	23.2	19.6	16.3
LT	4.3	17.8	11.8	10.7	9.1	8.4	35.7	21.9	19.3	16.3
LU	4.2	4.6	5.9	6	6.5	15.2	14.2	15.5	22.6	17.3
HU	7.4	11.2	10.2	7.7	6.8	18.0	26.4	26.6	20.4	17.3
MT	6.5	6.9	6.4	5.8	5.4	13.5	13.2	13.0	11.7	11.8
NL	4.2	5	7.3	7.4	6.9	5.9	8.7	13.2	12.7	11.3
AT	4.9	4.8	5.4	5.6	5.7	9.4	9.5	9.7	10.3	10.6
PL	9.6	9.7	10.3	9	7.5	21.7	23.7	27.3	23.9	20.8
PT	9.1	12	16.4	14.1	12.6	16.7	22.8	38.1	34.8	32.0
RO	6.4	7	7.1	6.8	6.8	20.1	22.1	23.7	24.0	21.7
SI	4.9	7.3	10.1	9.7	9	10.1	14.7	21.6	20.2	16.3
SK	11.2	14.5	14.2	13.2	11.5	20.3	33.6	33.7	29.7	26.5
FI	6.9	8.4	8.2	8.7	9.4	16.5	21.4	19.9	20.5	22.4
SE	6.1	8.6	8	7.9	7.4	19.3	24.8	23.5	22.9	20.4
UK	5.3	7.8	7.6	6.1	5.3	14.3	19.9	20.7	17.0	14.6

Source: Eurostat (2017). *Employment and unemployment; (LFS) Database*

While the Total Unemployment Rates (TUR) vary between EU Member States every year, the differences become more evident after the display of the crises and recession aftermath. The best and worst performing Member States in specific years have been bolded in both tables, usually concerning the same countries. However, not necessarily. For instance, Finland and Sweden are very well performing in the Youth long-term unemployment rates (0.7-1.7%, far below the EU average of 4-8%), however the Youth Unemployment Rates (YUR) vary from 16.5 to 24.8%, which is similar to other EU countries.

As seen in Table 2, YUR's usually are far more expressed than TUR's. In more recent years, Germany, the Czech Republic, Malta, the United Kingdom and Austria have managed to lower the TUR's below 6%. Denmark, Estonia, Luxemburg, Hungary, the Netherlands and Romania have close figures, while Poland's trend looks quite promising. The opposite situation goes for countries such as Greece, Spain, Croatia and Cyprus, with figures between 15-25% in 2015.

Regarding the YUR's, before 'The Crises' the average EU rate was 15.5% for the 15-24 years old Europeans, but it suddenly rose (p.e. 23.7% in 2013). The trend in the last three years suggests a better prospect for most countries, however it is still a astonishingly big problem for Greece, Spain, Croatia and Italy where the figures vary between 40-50% (2015). Germany, the EU economic and political 'leader' managed to achieve a much better result for its younger generations: only 7.2% in 2015. The next best performers regarding YUR's are Denmark and Austria, but with more than 10% of unemployed youth. Strong economic performances by these countries, almost certainly combined with dual-education systems which support vocational education and training achieved quite stable youth unemployment rates (compared to other EU Member States).

Some other important economies did not manage to reduce these rates significantly – Sweden, Belgium, Poland have still YUR's above 20%, while France has a rising 24.7% in 2015. A significant change in YUR's, compared to the pre-crises years, can be observed in the cases of Ireland, Cyprus, Latvia, Lithuania and Portugal. Baltic States, including Estonia, have managed to reduce high YUR's in a relatively short period, suggesting a high level of flexibility on the labour market. That is not the case for countries that, for example, encourage internships and apprenticeships, replacing them with quality employment for young people, thus hindering them from entering the labour market (European Youth Forum Publication, 2012).

Table 3. Youth long-term unemployment and NEET's in the EU

	Youth long-term unemployment rate (12 months or longer); %					Young people neither in employment nor in education and training (15-24 years) - % of the total population in the same age group				
	2007	2010	2013	2014	2015	2007	2010	2013	2014	2015
EU28	4.0	6.0	8.0	7.8	6.5	.	.	.	.	.
BE	5.6	6.7	7.3	8.0	7.9	11.2	10.9	12.7	12	12.2
BG	6.3	8.9	13.2	11.7	11.1	19.1	21	21.6	20.2	19.3
CZ	3.5	5.8	6.2	4.4	3.8	6.9	8.8	9.1	8.1	7.5
DK	.	0.9	1.3	1.1	0.9	4.3	6	6	5.8	6.2
DE	3.7	2.6	1.8	1.8	1.6	8.9	8.3	6.3	6.4	6.2
EE	3.1	12.2	6.5	4.4	2.0	8.9	14	11.3	11.7	10.8
IE	1.9	11.5	10.9	9.2	7.8	10.8	19.2	16.1	15.2	14.3
GR	9.4	11.7	30.3	31.5	28.0	11.3	14.8	20.4	19.1	17.2
ES	1.8	12.1	21.9	21.5	16.9	12	17.8	18.6	17.1	15.6
FR	4.4	6.6	6.5	7.2	7.0	10.7	12.7	11.2	11.4	12
HR	11.6	16.0	25.3	22.6	20.2	12.9	15.7	19.6	19.3	18.5
IT	8.2	12.3	21.0	25.1	22.0	16.1	19	22.2	22.1	21.4
CY	2.4	2.8	12.7	10.7	8.0	9	11.7	18.7	17	15.3
LV	1.2	12.0	6.8	4.7	4.4	11.9	17.8	13	12	10.5
LT	.	10.8	4.4	4.4	.	7.1	13.2	11.1	9.9	9.2
LU	.	3.7	3.6	.	.	5.7	5.1	5	6.3	6.2
HU	6.5	10.3	8.6	6.7	4.6	11.5	12.6	15.5	13.6	11.6
MT	3.7	3.9	3.2	3.2	3.5	11.5	9.5	9.9	10.5	10.4
NL	0.7	1.0	2.2	2.3	2.0	3.5	4.3	5.6	5.5	4.7
AT	1.3	1.6	1.4	1.4	1.7	7.4	7.4	7.3	7.7	7.5
PL	7.5	4.8	8.7	7.4	6.1	10.6	10.8	12.2	12	11
PT	4.6	6.9	13.8	12.6	9.9	11.2	11.4	14.1	12.3	11.3
RO	9.7	7.2	9.0	8.7	8.1	13.3	16.6	17	17	18.1
SI	3.0	4.9	8.5	7.6	5.8	6.7	7.1	9.2	9.4	9.5
SK	11.6	18.4	20.6	17.0	14.4	12.5	14.1	13.7	12.8	13.7
FI	0.9	1.6	1.0	1.0	1.7	7	9	9.3	10.2	10.6
SE	0.7	1.7	1.5	1.3	1.2	7.5	7.7	7.5	7.2	6.7
UK	2.2	4.7	5.9	4.7	3.2	11.9	13.6	13.2	11.9	11.1

Source: Eurostat (2017). Employment and unemployment; (LFS) Database

Youth long-term unemployment in the EU, comprising those among the youth which try to find jobs longer than 12 months, is declining in the last three years, even in the worst performing counties, such as Greece (28%), Italy (22%) and Croatia (20.2%; all in 2015). Nordic figures are incomparable – around 1%. Obviously young Danish, Swedes and Finns are included in the labour market but tend to stay employed for a relatively short period. On the other hand, young Southern Europeans have much less opportunities for work, even for seasonal or periodical jobs.

Finally, the right side of Table 3 presents the figures for the Young people Neither in Employment nor in Education or Training (NEET) as a percentage of the total population in the same age group (15-24 years). In this case, Italy, Bulgaria, Croatia and Romania lead the group of worst performers, with figures of 18-22% in most recent years. They are accompanied by Greece, Spain, Cyprus and Ireland, with a slightly better but still worrying situation. Much more efficient in the inclusion of unemployed youths into educational and/or training programmes seem to be countries such as The Netherlands (only 4.7% of NEET's in 2015), as well as Luxembourg, Denmark, Germany, Sweden, Austria and the Czech Republic. This indicator especially highlights the difference between the 'European core' states and the so-called 'EU periphery'.

4 METHODOLOGY DATA AND ANALYSIS

We use panel data for the econometric analysis of specific determinants on the youth unemployment rate. We used data on 28 EU countries plus Norway, Switzerland and Turkey in the period of ten years (last available data include years from 2005 to 2014).

The Youth Unemployment Rate includes all unemployed persons aged from 15 to 24 who are without work, available for work and seeking work actively (ILO, 2014). We include 15 variables in our models. Explanations, unit of measurement and sources of all data used in the regression analysis are given in Table 4.

Table 4. List of variables with explanations

Nº	Variable	Abbreviation	Explanation	Source
1	Youth unemployment	YUEM	Unemployment, youth total (% of total labour force ages 15-24)	World Bank Data
2	Public expenditure for labour market policies	PELMP	Public expenditure in labour market (LM) policies, % GDP	World Bank Data
3	GDP in previous year	GDP (-1)	GDP growth (annual %) in previous year	World Bank Data
4	Inflation	INFL	GDP deflator (annual %)	World Bank Data
5	Duration of compulsory education	DURED	Duration of compulsory education (years)	World Bank Data
6	Economic Freedom Index	ECFREE	Degree of economic freedom index. Index is composed of five elements separately evaluated on scale from 0 to 10 (Size of Government – Expenditures, Taxes and Enterprises; Legal Structure and Security of Property Rights; Access to Sound Money; Freedom to Trade Internationally; Regulation of Credit, Labour, and Business).	Fraser Institute data
7	Labour market reform index	LMRI	Labour market reform index. Index is composed of six elements separately evaluated on scale from 0 to 10:	Fraser Institute data

			mandated cost of worker dismissal, mandated cost of hiring, hiring and firing regulations, centralized collective bargaining, minimum wage, conscription.	
8	Long-term unemployment	LTU	Long-term unemployment (% of total unemployment)	World Bank Data
9	Migrations	MIG	Crude rate of net migration plus adjustment	Eurostat Database
10	Youth not in Education, Employment, or Training	NEET	Share of youth not in Not in Education, Employment, or Training (NEET), total (% of youth population)	World Bank Data
11	Participants in labour market policies	PPM	Participants in labour market policies (number)	Eurostat Database
12	Part-time employment	PTE	Part time employment, total (% of total employment)	World Bank Data
13	Population growth	PG	Population growth (annual %)	World Bank Data
14	Unemployment with tertiary education	UETE	Unemployment with tertiary education (% of total unemployment)	World Bank Data
15	Centralization	CENT	Population in the largest city (% of urban population)	World Bank Data
16	Total unemployment	TUE	Unemployment, total (% of total labour force) (modeled ILO estimate)	World Bank Data

Source: Authors.

For the economic situation in a country, we use macroeconomic indicators: gross domestic product (GDP) growth rates in the previous year and inflation rates. We add explanatory variables in different models and observe the effects of a specific variable on our baseline model. Some of them are related to education, such as duration of compulsory education or the rate of unemployed with tertiary education, some of them are related to the overall economic environment in a given country (i.e. economic freedom index), or demographic dynamics (population growth, migrations, population concentration in the metropolis region) and some of them are labour market specific (part-time employment, long term unemployment rates, labour market reforms index, etc.). All of the variables used as well as descriptive statistics of dependent and independent variables in empirical estimations are given in Table 5.

Table 5. Descriptive statistics

No.	Variable	Obs	Mean	Std. Dev.	Min	Max
1	Country	372	16	8.956318	1	31
2	YUEM	341	19.71642	9.867932	5.4	58
3	PELMP	305	1.490862	.9647714	.184	4.205
4	GDP (-1)	372	1.972061	3.820348	-14.81416	26.27606
5	INFL	372	2.618401	3.039527	-9.75288	20.14865
6	DURED	341	10.06452	1.372611	6	12

7	ECFREE	341	7.414692	.391142	6.29	8.5
8	LMRI	341	6.380735	1.191358	2.871486	8.465398
9	LTU	339	38.19145	15.13852	3.4	73.5
10	MIG	372	2.476344	6.575637	-25.2	22.2
11	NEET	339	11.92864	6.162612	3.44	42.43
12	PPM	295	383811.4	675696.4	522	4256636
13	PTE	341	13.7827	8.789203	1.6	50.7
14	PG	370	.3785936	.8279329	-2.258464	2.89096
15	UETE	341	15.78827	6.375628	2.9	36.2
16	CENT	312	22.48929	10.53463	5.602535	47.07472
17	TUE	341	8.499707	4.264694	2.3	27.2

Source: Authors.

Although we evaluate effects of different variables on the youth unemployment rate, we are specifically interested in the impact of public expenditure in labour market policies on the youth unemployment rate. Thus, we propose the following model:

$$YUEM_{it} = \beta_0 + \beta_1 * PELMP_{it} + \beta_2 * MECON_{it} + \beta_3 * V_{it} + e_{it}$$

Where $YUEM_{it}$ represents the dependent variable of the youth unemployment rate in country i at time t . $PELMP_{it}$ represents the public expenditure for labour market policies as a percentage of GDP. $MECON_{it}$ represents the macroeconomic situation in a specific country in a specific year. V_{it} represents the other control variables whose effects on youth unemployment dynamics we test in the following 17 different models. We labelled the residual as e_{it} . Based on Hausman test results and additional testing (sigmamore, sigmaless and xtoverid), we chose the fixed effect panel estimation method for the estimations in our models.

The results of the empirical estimations are presented in Table 6, 7 and 8. The baseline model evaluates the impact on public expenditure in labour market policies as a share in GDP, the GDP in the previous year and the inflation rate on the youth unemployment rates.

Table 6. Estimations on determinants of the Youth Unemployment Rate (models 1-6)

	(1)	(2)	(3)	(4)	(5)	(6)
PELMP	7.367*** (1.012)	7.247*** (1.061)	7.291*** (1.006)	5.986*** (1.103)	4.313*** (0.925)	4.302*** (0.906)
GDP (-1)	-0.887*** (0.128)	-0.862*** (0.137)	-0.911*** (0.128)	-0.836*** (0.128)	-0.680*** (0.110)	-0.619*** (0.111)
INFL	-0.293** (0.127)	-0.283** (0.129)	-0.328** (0.127)	-0.325** (0.125)	-0.329*** (0.107)	-0.111 (0.108)
CENT		-1.645** (0.736)				
DURED			-0.678** (0.336)			
PTE				0.609*** (0.209)		
LTU					0.397*** (0.0408)	
NEET						1.494*** (0.154)
Constant	11.64*** (1.899)	48.12*** (17.09)	18.71*** (3.983)	6.152** (2.654)	-0.633 (2.035)	-4.407* (2.305)

<i>Observations</i>	264	225	264	264	262	263
<i>R-squared</i>	0.640	0.665	0.646	0.653	0.748	0.748
<i>N. of countries</i>	28	24	28	28	28	28

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

Source: Authors.

In all 17 estimation models we conducted, the main macroeconomic variables we used (lagged GDP growth and inflation rates) are statistically significant and have negative coefficients, indicating favourable impact on reducing youth unemployment rates. According to our estimates, public expenditure on labour market policies have also a statistically significant impact on youth unemployment rates. However, in all 17 estimation models, including our baseline model, the coefficient is positive indicating that the increase of public expenditure in labour market policies as a proportion of GDP increases the youth unemployment rate. According to the baseline model, if the share of public expenditure in labour market policies increases by 1% of GDP, the youth unemployment rate will increase by 709.7 percentage points. Given that usually these expenditure range from 0.5 – 3% of GDP, an increase of 1 p.p. would represent a significant change in a national policy (for instance, in 2014 Croatia had 0.618% of GDP of LMP expenditure, whilst 1.6% of GDP would represent a huge increase – more than 2.6 times).

Model no. 1 represents the baseline model, characterized by the R-squared value of 0.64. It significantly describes the variations of the dependent variable. All models from no. 2 – 12 have an additional variable, which we combined with the baseline model, and although most of them are statistically significant, the R-squared varies modestly. In model no. 2 the fourth variable is the share of population in the largest city (% of urban population) and we abbreviated it to ‘Centralization’. It seems that the agglomeration effect within the national population actually decreases youth unemployment, which could suggest that younger generations tend to migrate to more urban areas (or in this case the major city) while searching for jobs or more education. Models 3 and 4 do not explain noticeably more the variations of the youth unemployment rate compared to the baseline model, but they suggest that the longer duration of compulsory education (model 3) decreases youth unemployment, while part-time employment increases it (model 4).

Models no. 5 and 6, which include the Long-term Unemployment Rate and the Share of youth Not in Education, Employment or Training (NEET) respectively, significantly change the level of explanation of the variations (R-squared = 0.748), but they also affect significantly the constant variable, making it negative and statistically insignificant (model 5) or less significant (model 6). In these two models the coefficient of PELMP drops to 4.3, while in other simple models its coefficient varies less compared to the baseline model, with model no. 8 being the third exception ($\beta_1 = 4.866$). In addition, model 6 is the only one where the inflation rate becomes statistically insignificant.

Table 7. Estimations on determinants of Youth Unemployment Rate (models 6-12)

	(7)	(8)	(9)	(10)	(11)	(12)
PELMP	7.097*** (0.986)	4.866*** (1.025)	6.624*** (0.934)	6.839*** (1.023)	7.666*** (1.026)	5.904*** (1.139)
GDP (-1)	-0.929*** (0.125)	-0.734*** (0.122)	-0.864*** (0.116)	-0.870*** (0.127)	-0.866*** (0.129)	-0.792*** (0.132)
INFL	-0.290** (0.123)	-0.343*** (0.119)	-0.292** (0.114)	-0.312** (0.126)	-0.320** (0.128)	-0.332*** (0.126)
UETE	-0.515*** (0.136)					
PG		-4.248*** (0.691)				
PPM			-8.95e-06 *** (1.42e-06)			

ECFREE				-4.978**		
				(1.985)		
LMRI					0.856	
					(0.537)	
MIG						-0.175***
						(0.0653)
Constant	19.50***	16.31***	16.28***	49.74***	6.109	14.00***
	(2.775)	(1.928)	(1.910)	(15.31)	(3.953)	(2.071)
Observations	264	263	256	264	264	264
R-squared	0.662	0.691	0.694	0.650	0.644	0.651
N. of countries	28	28	28	28	28	28

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors.

Models no. 7-10 and 12 keep the R-squared value a little bit above the baseline model's value by including specific statistically significant variables: Unemployment Rate among those with Tertiary Education (model 7), the annual Rate of Population Growth (model 8), the number of Participants in Labour Market Policies (model 9), the Degree of Economic Freedom Index (model 10) and the Crude Rate of Net Migration (plus adjustments) (model 12). All these variables reduce youth unemployment rates while augmenting their value, especially with the improved degree of economic freedom and the annual population growth rate. Model 8, as previously mentioned, considerably changes the coefficients of PELMP and somewhat in the case of the GDP rate, but not as much as in the more complex models (13-17).

Model no. 11 includes the Labour Market Reform Index, which usually suggests that labour market reforms related to mandated costs of worker dismissals, mandated costs of hiring, hiring and firing regulation, centralized collective bargaining, minimum wage and conscription can help reduce unemployment. A higher value of the Index indicates less effective regulation and more restrictive practices, thus a negative effect on unemployment. However, we find this variable not significant in this combination of variables, including as well the constant variable not being statistically significant. This would suggest that this Index does not reflect the determinants of youth unemployment.

Table 8 covers complex models (13-17), where we combined previously significant variables from simpler models. The R-squared values vary from 0.772 to 0.804, suggesting a higher level of explanation of variations in the rate of youth unemployment. Interestingly, the coefficients of PELMP and the GDP growth rate here are substantially different. In the baseline model they were 7.367 and -0.887 respectively, while in the complex models they drop between 3.5 and 2.9 for the Public Expenditure on LMP, and -0.636 and -0.726 in the case of the GDP growth rate. Models that are more complex reduce the effects of these two important independent variables, but explain better the effects of other explanatory variables, such as the population growth rate, the number of LMP participants and the degree of centralization/urbanization (regarding the major city, at least).

Table 8. Estimations on determinants of Youth Unemployment Rate (models 13-17)

	(13)	(14)	(15)	(16)	(17)
PELMP	3.515***	3.190***	3.373***	2.948***	3.323***
	(1.147)	(1.009)	(1.010)	(0.960)	(0.938)
GDP (-1)	-0.653***	-0.648***	-0.636***	-0.698***	-0.726***
	(0.122)	(0.117)	(0.117)	(0.106)	(0.105)
INFL	-0.336***	-0.343***	-0.373***	-0.317***	-0.313***
	(0.111)	(0.110)	(0.111)	(0.0993)	(0.0983)
CENT	-1.972***	-1.786***	-2.025***	-2.824***	-2.964***
	(0.670)	(0.622)	(0.635)	(0.635)	(0.632)
LTU	0.343***	0.330***	0.345***	0.288***	0.310***

	(0.0502)	(0.0467)	(0.0472)	(0.0450)	(0.0430)
PG	-2.084***	-2.015***	-1.848***	-1.113*	
	(0.791)	(0.698)	(0.701)	(0.643)	
ECFREE	0.857				
	(2.191)				
MIG	0.0152				
	(0.0659)				
PTE	-0.125				
	(0.220)				
LMRI			0.951*		
			(0.557)		
PPM				-7.02e-06	-7.42e-06
				***	***
				(1.26e-06)	(1.24e-06)
Constant	42.34*	44.11***	42.79***	72.80***	74.41***
	(21.65)	(14.39)	(14.34)	(14.64)	(14.66)
<i>Observations</i>	222	222	222	214	215
R-squared	0.773	0.772	0.776	0.804	0.801
N. of countries	24	24	24	24	24

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors.

In model no. 13, we added six variables to the baseline model, which resulted in the Index of Economic Freedom, the Crude Rate of Net Migration and the Part-time Employment Rate being statistically not significant. The other three added variables considerably upgraded the regression output, which can be observed in model no. 14, where we kept these three new variables alongside the baseline model: the annual Population Growth Rate, the Long-term Unemployment Rate and the degree of centralization (percentage of urban population living in the largest city).

Model no. 15 combines the model no. 14 with the Labour Market Reform Index, which obviously explains better the variations of the Youth Unemployment Rate in more complex models. However, in model no. 16 we replaced it with the Number of Participants in LMP. Among all tested models, model no. 16 has the highest R-squared value, suggesting that the variations in the Number of Participants in LMP contributes better to the explanation of the dependent variable (alongside the other significant variables in model 16). Finally, in model no. 17 we dropped the annual Population Growth Rate variable, which became less significant after the introduction of the variable of LMP Participation. The exclusion of this variable had very little effect on the overall result.

4 CONCLUSION

Unemployment, with emphasis on youth unemployment, needs efficient institutional and economic frameworks in order to face it and enable future economic growth and well-being. High youth unemployment trends represent a significant and sensitive issue across Europe. For that reason, policy makers and experts should work together on achieving faster and more appropriate inclusion of young Europeans into the labour market and the society in general, thus increasing the level of economic and social cohesion, as well as the growth of productivity, competitiveness and efficiency of the European human resources and the European economic system.

Results suggest that the public expenditure in labour market policies in the EU has not addressed adequately the issue of youth unemployment. Research show they are often focused on preserving existential needs and maintaining fundamental living conditions of the broader population instead of activating instruments for the decrease of unemployment rates among the youth. Widely used measures serve as compensations in the form of unemployment benefits and other types of special allowances. On the other hand, increased overall unemployment rates encourage the public sector to invest more in the improvement and expansion of labour market measures, trying to find a viable solution to this problem.

Our research indicates that public expenditure for labour market policies does not necessarily decrease youth unemployment. To our understanding, they can even worsen it. Further research is needed to analyse the adequacy of the common public policy instruments, or at least those on which high share of public money is spent while trying to provide a way out of unemployment for young Europeans.

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