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THE EPL INDEX, YOUTH UNEMPLOYMENT AND EMIGRATION WITHIN THE EU

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ABSTRACT. This article focuses on analysing the link between the rigidity of labour markets, the youth unemployment rate and the number of emigrants in the 19-30 age group within the EU in the years 2009-2020. The calculations show a very strong link (0.91-0.95) between the EPL index and the youth unemployment rate during the observed period. The nexus between youth unemployment and youth migration is confirmed as well. The linear dependence fluctuated between 0.61 and 0.65 in the same period. Furthermore, the correlation between total unemployment and total emigration reached up to 0.85 in the post-crisis period. The labour market rigidity and the EPL strictness can have, therefore, several effects; in addition to youth unemployment and youth emigration, total emigration is stimulated as well.

Keywords: employment protection (EPL), EU Member States, internationalization, migration, youth unemployment rate

Introduction

In 2008 the European Union was struck by the global economic crisis, which, in addition to the economic downturn, resulted in a significant increase in the unemployment rate within all EU Member States. Younger people (15-24 years old), who were about to enter the labour market or only had limited work experience, were particularly affected by this development. According to Insider - Outsider Theory (Lindbeck, Snower, 2001), young people belong to the category of outsiders with a low level of protection against dismissal and a slighter chance of finding a proper job. This age group also has a higher tendency to migrate due to fewer occupational and private ties (for more see, e.g. Van Mol, 2015, OECD, 2017b).

Moreover, labour markets are among areas where the EU has little influence. Within the EU, there are labour markets with a very different degree of flexibility or rigidity at the same time. However, in all EU Member States, the state regulates the length of the probation period, notice period, severance payment or minimum wage, which affects the flexibility and volume of flows between employment and unemployment or economic inactivity. Labour legislation, by its very nature, causes delays in hiring and dismissing workers, and can lead to an increase in unemployment if it is inappropriate.

The main impulse for youth emigration stems from a combination of the minimal possibility of finding a permanent job in their home economy (Blanchflower, 2007, De Waard et al, 2017) and the possibility of free movement of persons within the EU internal market (European Commission, 2016). Because the global economic crisis has started over a decade ago, the authors intend to focus on the post-crisis development and the period of 2009-2020. In the short-term view, the migration of the unemployed may have a positive effect on the national economy, as state budgets will save on social spending (OECD, 2017a). Moreover, remittances sent by foreign workers will also flow into the home economy. An additional benefit may be a higher degree of internationalization of human resources at the corporate level, which European companies intensively operating on the EU internal market can benefit from (Knight, 2004, Hitt et al. 2006 or Ruzzier et al., 2007).

In the long-term view, migration has negative impacts on source economies, particularly when migrants are permanently settled in the host economy. In the wake of the economic recovery, the emerging economy is thus losing labour, tax revenues and social insurance (Boeri, 2009, Barell et al., 2010), while the problem of migrants' social protection remains in the host economies (Al-Srehan, 2020); at the same time, the problem of the aging population deepens (Esping-Andersen, 1999, Rindfuss et al. Andersson, 2001). In addition, migration leads to the phenomenon of the so-called brain drain (Mountford, 1997, Borjas, 2000, OECD, 2017b) in the case of skilled, trained and educated people, which, in the long-term view, limits the growth potential of source economies. Furthermore, skilled migrants often choose the developed countries for migration considering the possibilities for work and professional development as one of the pull factors, so, they additionally strengthen the prerequisites for the economic development of the recipient countries (Oliinyk et al., 2022; Khalid & Urbański, 2021).

The main aim of this article is to state how the rigid labor markets effect youth unemployment and youth emigration. We presume that some youth emigrate from their home economies after being unemployed for some time, thus we analyze the nexus between youth unemployment and youth migration. Further, we analyze the link between total emigration and total unemployment where the youth migration could affect older age groups of the labour force as well (e.g. OECD, 2017, Lafreur et al, 2015).

This article is divided into three parts. The theoretical part analyses the link between the rigidity of the labour market and the youth unemployment rate. Furthermore, the authors analyse the nexus between the youth unemployment rate and the number of emigrants. The second part of the article follows with the methodology and statistical calculations. The final part focuses on a synthesis of the research carried out. Areas of investigation are as follows: 1) EU Member States that are also members of the OECD. In addition, the authors divided the EU into five socio-economic models¹, according to Sapir (2006) and Dickens (2015), because of the number of Member States and their heterogeneity. The main analysis is focused on: 2) South-European and Post-Communist countries representing the most important sources of intra-EU youth emigration during the period analyzed (Eurostat, 2018a, Barell, 2010, Blanchflower, 2007 etc.). For this purpose, we used the Eurostat Youth unemployment statistics and Emigration statistics. In addition to the EPL indicator, which is designed by the OECD, the authors proceed from the OECD database.

¹ The Anglo-Saxon model (Great Britain, Ireland) is characterized by a low level of government interventions, the decisive role of the market and the concept of a minimal state. The Continental model (Austria, Germany, France, Belgium, Luxembourg, the Netherlands) is based on the basic idea that preventing social problems is more effective than addressing them. The Scandinavian model (Finland, Sweden, and Denmark) is characterized by egalitarian tendencies and high redistribution of the national product. The Southern European model (Spain, Italy, Greece, Portugal), is defined by higher income inequality, and social systems do not reach the parameters prevalent in most of the original EU countries. The post-communist, or the so-called Central European model (the Czech Republic, Slovakia, Poland, Hungary, Slovenia) take on the elements of the continental and liberal model with regard to its time of origin.

1. Literature review

As outlined above, we will focus first on the issue of the link between labor market regulation and the unemployment rate, especially in the 15-24 age group. The most widespread indicator of labor market regulation is the EPL index, designed by the OECD (OECD, 2004a). It measures the degree of protection against the dismissal of different groups of workers, especially for insiders and outsiders. The index determines values between 0-6 and the higher the value, the higher the level of protection against redundancy.

The first studies on labour market segmentation dates back to the 1970s defining primary and secondary labor markets. The primary market is defined by better terms and conditions of work. The secondary one covers lower-paid and lower-security jobs (see, e.g. Reich et al., 1973 or Piore and Berger, 1980). The sharp increase in youth unemployment since 2008 was due to the long-term inability of this group to obtain permanent contracts that were typical for the generation of its parents. This segmentation was the result of partial liberalization of the labour markets, which in the 1990s and in the new millennium overwhelmingly took place only under temporary contracts.

To illustrate, between 1990 and 2008, the EPL for temporary employment contracts declined in Greece from 4.75 to 2.75, in Italy from 4.88 to 2.0 and in Portugal from 3.38 to 1.94 (OECD, 2018). By contrast, the value of EPL for regular work contracts had not changed since 1990 until the outbreak of the crisis and was in Greece 2.80, in Italy 2.76 and in Portugal 4.42². In order to reduce rigidity, these countries were forced to do so only after 2008, especially between the years 2011-2013 liberalizing the labor law for regular contracts (OECD, 2018).

However, the tendency toward young people in temporary jobs does not only occur in the EU's southern states. According to Eurostat (2018a), 32.2% of young people in the EU worked in temporary employment in 2008, compared to 6.5% in the 55-64 age group. In 2017, it was already 36.1% for young people and 7.6% for older workers. In some EU Member States, however, temporary workloads have more than doubled, such as Spain 71.3% or Croatia 82.4%.

The link between the value of EPL and unemployment had begun to be analyzed in more detail after the wave of part-time liberalization at the beginning of the millennium. However, the conclusions of these studies are not entirely clear. As can be seen, the selection of countries and the time span are largely swayed. Scarpetta (1996) discovered in the OECD Member States' analysis of 1983-1993 that the EPL has a negative impact on the growth of structural unemployment, with more pronounced effects on the young and the low-educated. The OECD (2004b) also clings to the same conclusion. Based on this 1985-2003 analysis for the OECD Member States, the EPL tends to increase the rate of exit from employment into unemployment and vice versa. Similar findings of the EPL's negative impact on structural unemployment also came from Nickell et al. (2003).

On the contrary, the calculations by Baker et al. (2004) shows that the EPL had no significant impact on the unemployment rate; over the period 1980-1999, unemployment in the OECD declined. O'Higgins (2012) examined the impact of the EPL on the youth unemployment rate in Western European countries. According to these calculations, the unemployment rate increased in 2007-11 in states with lower EPL, not with higher EPL.

Regarding more recent studies, they mainly confirm negative outcomes of EPL and youth unemployment. O'Higgins (2015) confirms that the emergence of high levels of temporary and part-time employment amongst young people and the long-term impacts of these contractual forms is also becoming a significant issue on their unemployment figures. Different results were revealed by Avdagic (2015), who analyzed 31 countries, including all EU Member

² A different methodology is used to calculate regular and contemporary contracts, so it is not possible to compare subindex values between them. See more in OECD (2004a)

States and most advanced economies in 1980-2009. However, her results offer no clear support for the argument that EPL is a cause of unemployment.

On the other hand, Gebel and Giesecke (2016) analyzed data from the LFS for 19 European countries for the period from 1992 to 2012. Their calculations show that deregulating the use of temporary contracts increased temporary employment risks of youths but did not reduce unemployment risks. Finally, Noelke (2016) performed empirical analysis on 16 West European countries and the United States for the period from 1980 to 2008. According to his analysis, evidence that deregulating temporary contracts at high levels of job security provisions has significantly increased youth unemployment rates and lowered youth employment rates. Potužáková and Mildeová (2015) found that the link is not unequivocal and that there are large differences within the EU Member States. There was strong correlation between EPL and high unemployment rates in the Southern countries. Conversely, in the countries with high EPL and dual education and apprenticeship systems (Germany, Austria, and the Netherlands), the nexus was not confirmed at all.

Further, we will focus on the nexus between youth unemployment and the recent youth migration within the EU. Young migrants are often described by the literature as highly educated, ambitious, adventurous and risk-taking (see, e. g. Borjas and Bratsberg, 1996, De Haas, 2010). The pre-crisis papers aimed mainly at impacts of East-West migration. According to Fihel et al. (2015), about 5 million migrants moved to Old Member States between 2004 and 2014, and their numbers grew sixfold within that period. The explanation for this considerable influx is analyzed, e.g. by Kahanec and Fabo (2013), Galgóczi, (2012) or Kureková (2013). According to their conclusions, there were mismatches between the education level and the labor demand in the source economies causing a “brain overflow” in Western Europe. These mismatches are usually influenced by educational migration which in the majority of cases is been derived from irreversible migration aspirations (Mishchuk et al., 2019).

Many studies analyzed youth migration effects on national economies (e.g. Barell et al, 2010, Blanchflower, 2007, De Waard et al, 2017), or on the regional level (Huber, Tondl, 2012, Rodriguez-Pose, Vilalta-Bufi, 2005). For example, Blanchflower et al. (2007) analyzed the migration from eight East European countries often hit by high levels of youth unemployment on the UK economy, which was the most preferred target country. According to their conclusions, this migration stream reduced inflationary pressures on the British economy and lowered the natural rate of unemployment. Huber and Tondl (2012) analyzed migration on EU's NUTSII levels during the period 2000-2007. For the emigrant regions, the GDP per capita was reduced by 0.44 % and 0.20 % for productivity in the long run. According to their conclusions, the migration is an aspect that does not promote economic convergence between regions of immigration (prevailing Eastern regions) and emigration (prevailing Western regions).

Recent papers have also started to focus more closely on South-North migration, typical for post-crisis development. O'Reilly et al. (2015) concluded that the migration flows changed from pre-crisis East–West to post crisis South-North as a result of the rising youth unemployment rates in the source countries. According to the LFS (Eurostat, 2017), this trend was accompanied by the return of the East Europeans residing in the Southern countries to either the source countries or, by re-emigration, to other EU Member States. After 2008, the main destination of the South Europeans was Germany and the UK Lafleur et al. (2016). The migration flows from the South grew rapidly compared with the pre-crisis period. However, even though the percentage growth of migration was impressive, the total figures remained relatively minor. For example, although between 2011 and 2012 there was a 45 percent increase in immigration from Spain to Germany, in absolute terms there were only 9,000 people. A similar situation can be observed in the crisis countries: Greece, Portugal, and Italy (Eichhorst et al, 2013).

In comparison with the previous generations, the influx from the South was smaller. One reason was declining fertility rates after the 1980s (e.g. Billari and Kohler, 2010), which reduced the number of potential emigrant cohorts. According to Lafleur et al. (2015), the North European labour markets no longer require a massive migration of uneducated people to place in labor-intensive activities such as mining or heavy industry. Currently, workers with specific skills are more readily required by North European businesses (Lüdemann and Richter, 2014). This fact reduces the chances of large-scale migration from the South, which was typical for the previous generations. A further obstacle is the South Europeans' low level of foreign language proficiency (European Commission, 2014). We should also emphasize the competition of emigrants from other source countries. For example, the above mentioned East Europeans arrived earlier, were often better educated, more language proficient and were, therefore, able to establish their position on the target labour markets (e.g. Kahanec, Kurekova, 2014).

Nevertheless, we can conclude that there have recently been two large emigration streams within the EU caused by rigid labour markets and high youth unemployment rates. Migration from the East was already initiated after the Eastern enlargement. The migration stream from the South was caused by the severe impacts of the worldwide crisis on their domestic economies.

Since 2019, the EU experienced a very unexpected phenomena, the pandemic of covid-19 hit the Europe. During the years 2019 and 2020 it caused in the whole continent a series of very tough measures, including lockdowns and various migration restrictions within the whole EU. This influenced also the migration volumes of the youth and turbulent development on European labour markets (e.g. Ando et al, 2022). According to Grzegorzcyk, and Wolff (2020) the youth unemployment was three times higher than among the over-55s and the pandemic only deepened this trend. Furthermore, the pandemic can have on youth a lasting effect. As Schwand and Till (2020) concludes, the youth who enter the labour market in the crisis years earn less during their careers, but work more. Unfortunately, we can expect that the position of the youth will probably worsen in the short-term future. The unemployment of this group can also affect the Brexit, which caused the turn back of many Europeans from the UK back to the continent and reversed therefore the migration streams of previous decade (Lulle et al, 2017, The migration observatory, 2020).

Concerning the nexus between EPL and youth emigration, there are several research papers which, in general, confirm the positive correlation between EPL strictness and emigration in the source economies (Zientara, Kuczynski, 2009, Viilmann Soosaar, 2012, Racič, 2013 or Fiaschi et al, 2016). However, most of the papers focus on the nexus between immigration effects and the labor market strictness (e.g. D'Amuri, Peri, 2014, O'Higgins, 2012, Sa, 2011 or Wickham, 2011) or on the link between EPL and youth unemployment rates, which are stated above.

In the second part we will, therefore, merge the nexus between EPL, youth unemployment and the youth emigration of this age group. We will test three hypotheses that 1) the high EPL causes high youth unemployment rate and 2) high youth unemployment causes emigration of the youth. Furthermore, we will 3) verify the link between the total unemployment rate and total emigration. We presume that the migration of the youth influences the older labour forces as well.

2. Methodological approach

Based on the theoretical research above, we have decided to analyze the following five variables in the statistical analysis of dependencies: the variable expressing the level of labour

market regulation (hereinafter referred to as EPL), youth unemployment (in %), youth emigration inhabitants (to 1 mil. inhabitants), total emigration (to 1 mil. inhabitants) and total unemployment (in %). We used the Eurostat Labour Force Survey, especially the youth unemployment statistics (Eurostat, 2022b) and migration statistics (Eurostat, 2022c). The total unemployment and total migration indicators are analyzed as well because the behavior of the youth in the long-term could influence the older age groups as well (OECD, 2022, European Commission, 2016). Because of the lack of data, with respect to the variable expressing youth emigration inhabitants, it was necessary to include young people in the 19-30 age group, i.e. young graduates and young people with short work experience, who are considered the most mobile age group (see, e.g. Borjas and Bratsberg, 1996, Van Mol, 2015).

The period analyzed (2009-2020) covers the period of the post-crisis recovery, which reflects the period since 2009 until the two pandemic years 2019-2020. We focused on the effects of the EPL on total unemployment with/without the annual delay, the impact of youth unemployment on youth emigration, as well as the impact of total unemployment on total emigration with/without the annual delay. The year 2020 is the last year for which data was available. The calculations were made for the two largest source regions of emigration within the European Union, which mainly target Germany and Great Britain, i.e. for the countries of South-Eastern Europe (Greece, Italy, Portugal and Spain); Central and Eastern European countries (the Czech Republic, Hungary, Poland, Estonia, the Slovak Republic and Slovenia). Nevertheless, the calculations of both source regions were integrated to obtain more relevant data samples. It should also be mentioned that migration flows are likely to be higher, as emigrants are under no obligation in the home economies to report their departure to another Member State.

In terms of regression and correlation analysis, various types of double dependencies were studied, namely the linear regression function (regression straight line), various types of regression functions linear only in terms of parameters (hyperbolic regression function, logarithmic regression function, quadratic regression function), as well as regression functions, which are non-linear nor in terms of parameters (exponential regression function, multiplicative regression function, reciprocal regression function, double reciprocal regression function, square root regression function, S-curve regression function, logistic regression function and Gompertz regression function). Regression and correlation analysis are described in detail in the statistical literature (see, e.g. Seber, Lee, 2014, Bates, Watts, 1988, Darlington, Hayes, 2017 or Montgomery, Peck, Viking, 2012). The data was processed using the SAS and Statgraphics statistical packets and the Microsoft Excel spreadsheet. Firstly, dependencies of individual variables were considered, always for the same year, i.e. the so-called without delay.

3. Conducting research and results

When selecting a suitable regression function, the highest determination coefficient model (the so-called adjusted determination coefficient) and the lowest standard error of estimation were preferred. In the case of all dependencies examined, the linear regression function (regression straight line) with the beginning at the zero point was evaluated as the most appropriate model.

In the case of a regression straight line, the total F-test and the individual t-test regression coefficient yield equivalent results. Tables 1 and 2 in the annexes show that all tests performed (both F-tests and t-tests) are significant at least at 5% significance level, and most tests even at 1% significance level. The determination coefficients in Tables 1 and 2 represent how many percent of the variability of the observed values of the explained (dependent) variable have been explained by the selected regression (straight line) and the corresponding explanatory

(independent) variable. The correlation coefficient can take values from interval $<-1; 1>$; in the case of its positive value, it means a direct dependence and in the case of its negative value, it means an indirect linear dependence. All the calculated correlation coefficients in Tables 1 and 2 show the linear dependence of the respective dependence. According to a very rough rule, the values from 0.90 express a very strong direct linear dependence, from 0.80 to 0.89 they show a strong direct linear dependence, from 0.70 to 0.79 a moderate direct dependence, and from 0.60 to 0.69 they demonstrate weak direct linear dependence. Values below 0.60 already point to a very weak direct linear dependence.

The normality of the distribution of the variables used was verified both visually and by using the Kolmogorov-Smirnov Goodness of Fit Test. The Chi-square Goodness of Fit Test could not be used due to the small number of observations. All Durbin-Watson statistic values of the selected models lie in the interval (1.6; 2.4). These values can, therefore, be considered as close to two, and, thus, they indicate that there is no problem with autocorrelation. It was also necessary to assess whether the residues were randomized. On the basis of a visual assessment, it can be stated that for all the selected models, the nature of the residues can be considered random. In addition to the visual assessment, a Glejser test was performed, which did not show any problems with heteroscedasticity. Problems with multicollinearity (i.e. deleterious dependence between explanatory variables) did not need to be verified because only one explanatory variable was inserted into the model. For the above reasons, the selected linear regression functions can be considered appropriate.

Table 2 represents the estimated linear regression functions for the variant with no annual delay, and Table 3 represents the same for the delayed variant. The sample regression straight line equations have the form $Y = b_0 + b_1x$, where b_0 is the sample regression constant, i.e. the intersection of the sample regression straight line with the vertical axis and b_1 is the sample regression coefficient, i.e. the direction of the sample regression straight line. The zero regression constant model was evaluated as the best in all cases. From the positive values of the sample regression coefficient, we conclude the direct linear dependence of the explained variable on the explanatory variable; from the negative values of the sample regression coefficient, we conclude the indirect dependence of the explained variable on the explanatory variable.

All values of the sample regression coefficient indicate a direct linear dependence of the explained variable on the explanatory variable. The regression coefficient indicates how many units (in units of the explained variable) the value of the explained variable changes on average (increases on average in the case of direct linear dependence) if the value of the explanatory variable increases by one unit. The values of the sample regression coefficient are high, especially in the cases of total emigration dependence on total unemployment, both in the case of the models with and without delay.

All models are significant at the 10% significance level (using F-tests and t-tests). Almost all linear models are significant even at the 1% significance level. Only in the case of linear dependence of youth emigration on youth unemployment are models significant at the 5% level of significance at most.

The sample coefficient of determination indicates how many percent of the variability of the observed values of the explained variable was explained by the respective explanatory variable and the selected linear regression function.

All the sample correlation coefficient values are positive (they must be the same parity as the sample regression coefficient values), so the sample correlation coefficient values also indicate a direct linear dependence of the explained variable on the explanatory variable.

The sample correlation coefficient values point to a very close linear dependence, especially in the case of linear dependence of youth or total unemployment on EPL, both for

models with no delay and for models with annual delay, especially at the beginning of the analyzed period. We observe the lowest correlation coefficients in models of linear dependence of young emigration on youth unemployment, where the models are not significant at the 1% significance level. This is due to the small sample size, where the tests have low power.

When focusing on results, we can say, that the correlation between youth unemployment and the EPL index slightly declined from 0.91 in 2009 to 0.85 in 2016 in the models with one-year delay but remains very strong for the whole observed period. Strong direct linear dependence was confirmed in the case of correlation of total migration and total unemployment. The dependence grew from 0.81 in 2009 to 0.85 in 2014 in the models with one-year delay. Between youth emigration and youth unemployment linear dependence was moderate fluctuating between 0.61 and 0.65 in the models with one-year delay in the same period.

The dependence of the variable "Youth unemployment" on "EPL" in 2018-2019 is significant up to the 5% (and of course 10%) level of significance, not at the 1% level of significance, compared to the previous period, when it was also significant at the 1% level of significance. The dependence of "Youth employment in the given year" on "EPL in the previous year" is significant even at the 1% level of significance, as in the previous period. It cannot be calculated for 2020 due to missing data for EPL. The dependence of "Youth emigration" on "Youth unemployment" is significant only at the 10% level of significance in 2018-2020, the same as in the previous period. The dependence of "Youth emigration in the given year" on "Youth unemployment in the previous year" is significant up to the 10% level of significance, the same as in the previous period.

The dependence of "Total unemployment" on "EPL" in 2018-2019 is significant up to the 5% (and of course 10%) level of significance, not at the 1% level of significance, compared to the previous period, when it was also significant at the 1% level of significance. The dependence of "Total unemployment in the given year" on "EPL in the previous year" is significant even at the 1% level of significance, as in the previous period. It cannot be calculated for 2020 due to missing data for EPL. The dependence of "Total emigration" on "Total unemployment" is significant, as in the previous period, even at the 1% level of significance. The dependence of "Total emigration in the given year" on "Total unemployment in the previous year" is significant even at the 1% level of significance, as in the previous period.

All three hypotheses set were confirmed with the strongest correlation in the case of youth unemployment and EPL strictness. We can say that the labour market rigidities can have various effects. Firstly, the youth do not have fair chances to acquire a job and tend to experience higher unemployment. As a result, they tend to emigrate from their source countries. Finally, the EPL strictness strongly correlates with total emigration, which reduces the labour force in the source countries as well.

Our findings also confirm the migration statistics of Eurostat (2018c). Between 2009 and 2016 more than 220 thousand people aged 19-30 emigrated from Italy, about 860 thousand people from Spain and 140 thousand from Portugal. This means that this region lost more than 1 million young people within less than one decade. In the CEE region, we can observe a similar and continuing trend already initiated after 2004. From Slovakia, since 2009, almost 50 thousand emigrated, 100 thousand from Hungary and almost 540 thousand young people from Poland.

When focusing on the recent trends, there was a minor decline in correlation strength between "Youth emigration" and "Youth unemployment" in 2020 (only 0.56). This decline we explain by the impacts of pandemic measures caused by the covid-19, which reduced the opportunities to migrate (see e.g. Cairns et al, 2022 or Podra et al, 2021). Further, there is visible an effect of Brexit as well. Since 2019, more Europeans emigrated from the UK than immigrated (The migration observatory, 2020).

Conclusion

The rigidity of the labour markets, which is often encountered, has been a struggle in the long-term view for many EU Member States, and can have various impacts on different groups of workers. Employees with indefinite contracts, who have historically formed the core of the electorate, still enjoy a considerable degree of protection against dismissal. Members of the young generation have a significantly worse position because of the high level of protection enjoyed by their parents' generation. As a result of these disparities, the unemployment rate of this particular age group is very high. Young people also respond to emigration from their home economies because they do not see any opportunity of finding a job there.

The authors' calculations show that if young people do not have the potential to find a job, their unemployment rate increases and thus, to a greater extent, they emigrate from their home economies, even if the source economies (southern EU and post-communist states) are in the phase of economic recovery with a view to create new job positions. At the 5% significance level, a strong correlation between the EPL and the youth unemployment rate, as well as between the youth unemployment and the emigration of 19-30 age group, was confirmed in the period of 2009-2020. The tested hypotheses were, therefore, confirmed ranging from very strong dependency (EPL index and youth unemployment) to moderate dependence (total unemployment and total migration) in the observed period.

Based on both authors' calculations and theoretical research, it can be stated that, in the last decade, the internal migration of the inhabitants from the post-communist and South European countries to the Continental and Anglo-Saxon model countries is taking place. The Nordic model countries are only marginally affected by emigration due to the small size of these economies and language barriers. We can also presume that youth migration is one of the most visible effects of the single market freedom of movement in the recent decade. However, its effect on most of the affected regions would deserve more thorough research, which the authors plan to carry out in the future.

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Annexes

Table 1. Results of regression and correlation analysis for non-delayed variables
(* significance, - insignificance)

Year	Model	Determination coefficient (%)	Correlation coefficient	Significance level		
				1%	5%	10%
2020	Youth emigration = 0,1679*Youth unemployment	31,28	0,5593	-	-	*
	Total emigration = 62,9721*Total unemployment	77,99	0,8831	*	*	*
2019	Youth unemployment = 7,1422*EPL	60,93	0,7806	-	*	*
	Youth emigration = 0,4437*Youth unemployment	51,45	0,7173	-	-	*
	Total unemployment = 3,3957*EPL	62,44	0,7902	-	*	*
2018	Total emigration = 51,2836*Total unemployment	67,39	0,8209	*	*	*
	Youth unemployment = 6,8108*EPL	59,49	0,7713	-	*	*
	Youth emigration = 0,2977*Youth unemployment	40,55	0,6368	-	-	*
2017	Total unemployment = 3,3153*EPL	56,54	0,7519	-	*	*
	Total emigration = 83,6200*Total unemployment	80,44	0,8969	*	*	*
	Youth unemployment = 7,9241*EPL	73,83	0,8592	*	*	*
2016	Youth emigration = 0,6992*Youth unemployment	40,44	0,6359	-	-	*
	Total unemployment = 3,3195*EPL	71,71	0,8468	*	*	*
	Total emigration = 62,9861*Total unemployment	65,27	0,8079	*	*	*
2015	Youth unemployment = 8,6522*EPL	73,21	0,8556	*	*	*
	Youth emigration = 2,8586*Youth unemployment	33,03	0,5747	-	-	*
	Total unemployment = 3,7609*EPL	72,86	0,8536	*	*	*
2014	Total emigration = 56,5990*Total unemployment	67,36	0,8208	*	*	*
	Youth unemployment = 9,4084*EPL	73,07	0,8548	*	*	*
	Youth emigration = 2,4914*Youth unemployment	34,70	0,5891	-	-	*
2013	Total unemployment = 4,1173*EPL	73,26	0,8559	*	*	*
	Total emigration = 51,5195*Total unemployment	68,32	0,8265	*	*	*
	Youth unemployment = 10,2463*EPL	73,73	0,8587	*	*	*
2012	Youth emigration = 2,4816*Youth unemployment	38,31	0,6189	-	-	*
	Total unemployment = 4,4667*EPL	72,95	0,8541	*	*	*
	Total emigration = 47,5860*Total unemployment	71,60	0,8462	*	*	*
2011	Youth unemployment = 10,8541*EPL	72,95	0,8541	1%	5%	10%
	Youth emigration = 2,5734*Youth unemployment	45,53	0,6749	-	*	*
	Total unemployment = 4,6987*EPL	72,37	0,8507	*	*	*
2010	Total emigration = 48,2175*Total unemployment	74,10	0,8608	*	*	*
	Youth unemployment = 10,4949*EPL	75,17	0,8670	*	*	*
	Youth emigration = 2,3052*Youth unemployment	35,11	0,5925	-	-	*
2009	Total unemployment = 4,4413*EPL	73,77	0,8589	*	*	*
	Total emigration = 50,1558*Total unemployment	73,28	0,8560	*	*	*
	Youth unemployment = 9,2045*EPL	76,89	0,8769	*	*	*
2008	Youth emigration = 2,5045*Youth unemployment	41,15	0,6415	-	*	*
	Total unemployment = 3,9193*EPL	76,08	0,8723	*	*	*
	Total emigration = 52,4480*Total unemployment	71,33	0,8446	*	*	*
2007	Youth unemployment = 9,0359*EPL	81,39	0,9022	*	*	*
	Youth emigration = 2,8428*Youth unemployment	44,85	0,6697	-	*	*
	Total unemployment = 3,8804*EPL	79,16	0,8897	*	*	*
2006	Total emigration = 47,7674*Total unemployment	65,45	0,8090	*	*	*
	Youth unemployment = 8,1569*EPL	84,51	0,9193	*	*	*
	Youth emigration = 2,4039*Youth unemployment	34,84	0,5903	-	-	*
2005	Total unemployment = 3,4130*EPL	82,60	0,9089	*	*	*
	Total emigration = 51,7637*Total unemployment	63,82	0,7989	*	*	*

Table 2. Results of regression and correlation analysis for delayed variables
(* significance, - insignificance)

Model	Determination coefficient (%)	Correlation coefficient	Significance level		
			1%	5%	10%
Youth unemployment 2020 = 5,4750*EPL 2019	68,96	0,8304	*	*	*
Total unemployment 2020 = 4,8220*EPL 2019	75,35	0,8680	*	*	*
Youth unemployment 2019 = 7,9675*EPL 2018	72,17	0,8495	*	*	*
Youth emigration 2020 = 2,6649*Youth unemployment 2019	30,87	0,5556	-	-	*
Total unemployment 2019 = 4,5280*EPL 2018	75,03	0,8662	*	*	*
Total emigration 2020 = 56,3979*Total unemployment 2019	61,32	0,7831	*	*	*
Youth unemployment 2018 = 6,7420*EPL 2017	71,60	0,8462	*	*	*
Youth emigration 2019 = 2,6987*Youth unemployment 2018	31,64	0,5625	-	-	*
Total unemployment 2018 = 3,7984*EPL 2017	72,44	0,8511	*	*	*
Total emigration 2019 = 56,4250*Total unemployment 2018	61,64	0,7851	*	*	*
Youth unemployment 2017 = 9,1456*EPL 2016	76,67	0,8756	*	*	*
Youth emigration 2018 = 2,7257*Youth unemployment 2017	33,45	0,5784	-	-	*
Total unemployment 2017 = 5,0662*EPL 2016	77,92	0,8827	*	*	*
Total emigration 2018 = 58,8622*Total unemployment 2017	69,93	0,8362	*	*	*
Youth unemployment 2016 = 8,6522*EPL 2015	73,21	0,8556	*	*	*
Youth emigration 2017 = 0,6133*Youth unemployment 2016	37,04	0,6086	-	-	*
Total unemployment 2016 = 3,7609*EPL 2015	72,86	0,8536	*	*	*
Total emigration 2017 = 57,3595*Total unemployment 2016	68,39	0,8270	*	*	*
Youth unemployment 2015 = 9,4084*EPL 2014	73,07	0,8548	*	*	*
Youth emigration 2016 = 2,5491*Youth unemployment 2015	31,05	0,5572	-	-	*
Total unemployment 2015 = 4,1173*EPL 2014	73,26	0,8559	*	*	*
Total emigration 2016 = 51,6726*Total unemployment 2015	66,93	0,8181	*	*	*
Youth unemployment 2014 = 10,1252*EPL 2013	73,48	0,8572	*	*	*
Youth emigration 2015 = 2,3515*Youth unemployment 2014	35,89	0,5991	-	-	*
Total unemployment 2014 = 4,4177*EPL 2013	72,83	0,8534	*	*	*
Total emigration 2015 = 47,6988*Total unemployment 2014	69,21	0,8319	*	*	*
Youth unemployment 2013 = 10,6910*EPL 2012	74,37	0,8624	*	*	*
Youth emigration 2014 = 2,4641*Youth unemployment 2013	39,78	0,6307	-	-	*
Total unemployment 2013 = 4,6212*EPL 2012	73,56	0,8577	*	*	*
Total emigration 2014 = 44,9113*Total unemployment 2013	72,61	0,8521	*	*	*
Youth unemployment 2012 = 10,1714*EPL 2011	75,45	0,8686	*	*	*
Youth emigration 2013 = 2,7656*Youth unemployment 2012	47,40	0,6885	-	*	*
Total unemployment 2012 = 4,2960*EPL 2011	73,77	0,8589	*	*	*
Total emigration 2013 = 50,9646*Total unemployment 2012	76,24	0,8731	*	*	*
Youth unemployment 2011 = 9,2046*EPL 2010	79,36	0,8908	*	*	*
Youth emigration 2012 = 2,6654*Youth unemployment 2011	38,26	0,6185	-	-	*
Total unemployment 2011 = 3,9152*EPL 2010	78,36	0,8852	*	*	*
Total emigration 2012 = 56,4494*Total unemployment 2011	74,90	0,8654	*	*	*
Youth unemployment 2010 = 8,8862*EPL 2009	82,55	0,9086	*	*	*
Youth emigration 2011 = 2,5357*Youth unemployment 2010	41,19	0,6418	-	*	*
Total unemployment 2010 = 3,8366*EPL 2009	81,15	0,9009	*	*	*
Total emigration 2011 = 52,2781*Total unemployment 2010	68,91	0,8301	*	*	*
Youth unemployment 2009 = 8,1290*EPL 2008	84,44	0,9189	*	*	*
Youth emigration 2010 = 2,9280*Youth unemployment 2009	43,46	0,6592	-	*	*
Total unemployment 2009 = 3,4007*EPL 2008	82,50	0,9083	*	*	*
Total emigration 2010 = 54,3392*Total unemployment 2009	65,85	0,8115	*	*	*