Argumenta Oeconomica
Year 2024, Vol. 52, No. 1
ISSN 2720-5088

Reactiveness and inclusiveness as the characteristics of regional labour markets regarding the situation of young people[1]

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Quote as: Bal-Domańska, B. (2024). Reactiveness and inclusiveness as the characteristics of regional labour markets regarding the situation of young people. *Argumenta Oeconomica*, 1(52), 1-17.

DOI: 10.15611/aoe.2024.1.01

JEL Classification: J1, J64

Abstract: Having observed the growing number of transnational shocks affecting the national and regional economies, it is worth assessing the condition of regional labour markets, primarily in the con -text of the situation of young people, who for many years have been one of the most vulnerable groups in the labour market. The problem of non-inclusiveness of the labour markets regarding young workers affects both markets presenting high unemployment rates and highly responsive to economic shocks, and also those featuring low youth unemployment rates and stable economic conditions. The article defines models of regional labour markets with regard to the situation of young people in terms of their reactivity of youth labour markets to economic shocks, and their inclusiveness compared to adults.

Keywords: inclusiveness, reactiveness, young people, unemployment, labour market, regions (NUTS-2)

1. Introduction

The situation of young people in the labour market has been supported by national and regional policies for many years. Despite the implemented measures and tools aimed at reinforcing their professional position, in many regions the situation faced by young people is still weaker than that experienced by adults.

The aspects determining the situation of young people in the labour market can be grouped according to the impact level into three main groups of factors:

[1] An early version of this work is available on the Research Square (10.21203/rs.3.rs-2073421/v1).

1. **macroeconomic** – covering the level of economic development, business cycles, structure of the economy, etc.
2. **institutional** – approached as the policy and tools of the labour market and, more broadly, social policy,
3. **individual** – related to a particular person's preferences, education, family situation, etc.

This study highlights the macroeconomic factors affecting the situation in the labour market. The links of modern economies within the framework of international supply chains and financial (banking) relations, as well as the movement of workers, create many opportunities for the development of national and regional economies. At the same time, in periods of shocks (recession), especially those of an international or global scale, rapid breakdowns of regional economies are observed, one of the first negative consequences of which is the deterioration of labour market conditions, including an increase in unemployment rate. Recent years have brought about many crises involving numerous countries and regions. They include the financial crisis of 2008-2010 (the so-called Great Recession), which began in the US real estate market, the COVID-19 pandemic which started in 2020, and the conflict between Ukraine and Russia, which, apart from military activities, also involves the implementation of a number of economic restrictions seriously disrupting the previously developed relations in international trade, primarily in the energy market. Each of these disruptions had a negative impact on the economies of the European countries.

In view of the above, an important question arises about the resilience of economies and labour markets to economic shocks. A low resilience of labour markets to recession is manifested by the deterioration in the quality of life of the inhabitants. This problem predominantly affects young people who experience unfavourable trends in the economy and employment much more strongly (Hoynes et al., 2012), (Choudhry et al., 2013), (Hutengs & Stadtmann, 2013), (Dunsch, 2017), (Bod'a & Považanová, 2021), (Forsythe, 2021). Numerous analyses unanimously confirm that young people have a clearly weaker position in the labour market in many countries (regions), which translates into a high unemployment rate. These differences are estimated at the level of approximately twice the unemployment rate of adults (Perugini & Signorelli, 2010), (Bal-Domańska, 2021), (Bal-Domańska, 2022). Moreover, even when they do find jobs during shocks (recessions), the jobs are more likely to be lower quality and with lower pay than the jobs they could expect to find during economic expansions (Kahn, 2010), (Forsythe, 2021). Von Wachter (2020, p. 177) suggests (based mostly on the U.S. economy) that *for a typical increase of unemployment in a recession – a rise of 4-5 percentage points in the unemployment rate – the effect of graduating from college in a recession leads to a sharp initial reduction in annual earnings of about 10 percent that fades after about ten years in the labour market*, and moreover, might end up entering different occupations or otherwise less attractive jobs. Another observation is that the size and duration of earnings losses are worse for less educated workers. As stated by (Von Wachter, 2020, p. 169) *starting out one's working life during a recession effects on health and other outcomes like marriage, divorce, and women's fertility.* Other authors also present similar results, e.g. in the case of mental health issues, as for the construction sector in the Spanish labour market (Farré et al., 2018).

The main purpose of this analysis was to assess regional labour markets according to the situation of young people in European regional labour markets. The assessment was based on two problems:

- reactiveness of regional labour markets understood as the tendency to change the level of unemployment of young people under the influence of various macroeconomic phenomena, such as shocks and the subsequent periods of recession or economic growth;
- labour market inclusiveness in relation to young people – understood as the degree of young people's activity in the labour market compared to that of adults and measured by the extent to which their unemployment rates respond to unemployment rates of adults.

The main goal of the analysis is to diagnose and characterise the quality of regional labour markets for young people in the face of the dynamically changing macroeconomic conditions.

Two research questions were formulated:

1. How did the regional labour markets for young people react to economic shocks in the analysed period?
2. Is the high reactiveness of labour markets closely related to the low level of inclusiveness regarding young people?

The final result of the analysis is the typology of regions of the European countries in terms of the two identified problems: reactiveness and inclusiveness, which allows an in-depth description of the problems affecting the regional labour markets of young people due to the broadly approached macroeconomic conditions. Each of these problems has different sources. Reactiveness is largely related to the labour market structure presenting low resilience to changes in the environment, the instability of sales markets or the occurrence of crises. Inclusiveness is determined by the demographic situation, social policy, adequacy of qualifications to the needs of the labour market, individual choices made by young people, and even the family situation of young workers. Some importance can also be attributed to the structure of the economy and the availability of jobs for young people in specific sectors of the economy.

At this point, it is worth highlighting that the problem of non-inclusiveness of labour markets in relation to young people has been progressing in recent years. As Bal-Domańska (2022) indicated, when discussing the situation of the European Union countries "as many as 23 economies turned out to be non-inclusive for 2020 (in 2019, before the Covid-19 pandemic, there were 20 such economies). (…) For comparison, in 2003, 2006 and 2017, there were only 14 non-inclusive economies".

2. Research problem and procedure

2.1. The concept of reactiveness and inclusiveness

The typology of regional labour markets for young people in the selected European countries is based on two problems: reactiveness to shocks and inclusiveness.

The problem of labour market reactiveness to shocks was defined based on the strength of changes in youth unemployment rate over time. The labour market is one of the most vulnerable to crisis areas in the economy. A rapid rise in the unemployment rate is a frequent effect of the turmoil in the political and economic environment. The level of the labour market response to shocks may range from a slight increase to a sudden spike in the unemployment rate lasting even for several periods of time. There are many factors that determine the reactiveness of regional labour markets to shocks. The crucial role is played by endogenous factors that directly determine the correlations occurring in the economy and the labour market, which include the level of economic development, diversification and structure of the economy, raw material and resource independence, the level of technological development characteristic for the economy and the quality of human capital. The markets dominated by employment in the service sectors or industries dependent on international supply chains are particularly vulnerable to the negative consequences of shocks in the macro-environment, and react faster, stronger and longer to adverse turmoil. The consequences of shocks may affect all employees, however, young people at the beginning of their professional career remain the most exposed to the negative effects of shocks. The unemployment rate and its changes are significantly more extensive for the group of young people compared to that of adults (Bal-Domańska, 2022). One of the negative effects of the high reactiveness of regional labour markets to shocks is an increase in the disproportions in the unemployment rates of young people and adults, i.e. a decrease in the inclusiveness of regional labour markets in relation to young people.

The inclusiveness of regional labour markets is understood as the level of inclusion of people from the particular group (e.g. young people) to work (employment) (Bal-Domańska, 2022). Inclusiveness defined in this way can be identified through the association between the unemployment level of

young people (aged 15-24) and adults (aged 25 and above). Inclusiveness is manifested through an insignificant difference (gap) between the unemployment rate of the young people and the reference group (adults), as opposed to non-inclusive markets, where the disproportions in the unemployment rate between different groups are large.

The reasons for the low inclusiveness of regional labour markets in relation to young people include both those on the supply side of the labour market (such as insufficient number of jobs, low generational replacement of employees, e.g. closing the positions occupied by retiring employees), and on the demand side (resulting, e.g. from the mismatch between young people's qualifications and the needs of entrepreneurs, rising salary expectations). The periods of crisis exacerbate the employment problems of young people. Entrepreneurs in the so-called difficult times, primarily reduce the demand for new employees, which results in the absence of job offers for young workers, and also resort to workforce reduction, which frequently also means dismissing people from younger age groups. As found in (Forsythe & Wu, 2021) researching the cyclical sensitivity of unemployment rates for younger workers (those with less than ten years of work experience) and their respective counterpart group of more experienced workers for the US, the separation rates (employee turnover rate, which measures the percentage of employees who left the organisation due to both voluntary and involuntary separation reasons during the reporting period) explain all of the unemployment gap, while the job-finding rate explains none of the difference for young workers. Naturally, next to involuntary separation reasons, in some cases young people can leave work voluntarily.

Therefore, the unemployment rate in the periods of economic turmoil for young people, increases more significantly, thus intensifying the problem of non-inclusiveness of labour markets in relation to them.

2.2. Research procedure of reactiveness and inclusiveness measuring

The research procedure covered four main stages of the study:

I. Collecting data on youth unemployment rate (YUR) and adult (25 and above) unemployment rate (AUR) for the European NUTS-2 regions.
II. Defining the types of regional labour markets in terms of their reactiveness to economic shocks.
III. The characteristics of the inclusiveness of regional labour markets in terms of the situation of young adults, in static (YA) and long term (α) approach.
IV. The typology of regional labour markets regarding the inclusiveness and reactiveness issues.

The data were retrieved from the Eurostat database [Table LFST_R_LFU3RT]. The data (indicators) are based on the results of the European Labour Force Survey (EU-LFS). According to the Eurostat information the EU-LFS provides population estimates for the main labour market characteristics, such as employment, unemployment, inactivity, hours of work, occupation, economic activity and other labour related variables, as well as the important socio-demographic characteristics, such as sex, age, education, household characteristics and regions of residence. The definitions of employment and unemployment, as well as other survey characteristics follow the definitions and recommendations of the International Labour Organisation. It is worth citing two definitions (Eurostat metadata[2]). The first one defines population of people in the labour force, which comprise persons who were either employed or unemployed during the reference week. This aggregate includes all persons offering their work capacity in the labour market (the supply side of the market). The second definition covers the unemployed, comprising persons aged 15 to 74 (in case of youth 15-24) (in completed years at the end of the reference week) who were: (a) not employed during the reference week (persons who during the reference week did not work for at least one hour for pay or profit or family gain, and did not have a job or business from which they were temporarily absent), and (b) currently available for work, i.e. were available for paid employment or self-employment before the end of the two weeks following

[2] UROSTAT (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_labour_force_survey_-_methodology#EU-LFS_concept_of_labour_force_status)

the reference week; and (c) actively seeking work, i.e. had either carried out activities in the four-week period ending with the reference week to seek paid employment or self-employment, or found a job to start within a period of at most three months from the end of the reference week.

Next, 313 NUTS-2 regions from 35 European countries[3] were selected for the study. The data covered the years 2008-2020. Unfortunately, numerous data gaps were observed. During the analysed period, there were changes in the number of NUTS-2 units, which resulted in data gaps (e.g. for Polish regions in the initial years of the analysis). The United Kingdom's exit from the European Union translated into the absence of data in Eurostat database on the unemployment rate, in particular in 2020. In the selected regions, the amount of missing information was large and hence these regions were excluded from the analysis. For individual gaps, the methods of extra and interpolation were applied, or the values from the closest year were used, while in presenting the analysis results, the number of regions was provided each time to specify the size of the analysed group of regions.

Two research approaches were used in the analysis, the first referred to the methodology for preparing the classification of regions in terms of their reactiveness to economic shocks, and the second –for the estimation of the YA and α inclusion.

Classification methods were used to define the regions featuring a similar level of reactiveness to economic shocks. The source literature recommends the *k*-means method in the classification using time series clustering (Aghabozorgi et al., 2015). The *k*-means algorithm (Macqueen, 1967) aims to separate *n* regions in *k* non-overlapping groups as to minimise the distances between the points and the centre of their group. The squared Euclidean distance was used for the classification, *k* unique random regions were adopted as the initial group centres. The analysis of the dendrogram prepared using Ward's method allowed for determining the number of classes. Ultimately, the division into four groups of regions was adopted for the data on YUR in the following years of 2008-2020:

- Highly responsive – showing the highest YUR and the strongest increases in YUR as a result of economic disturbances.
- Reactive – with a moderately high level of YUR and a clearly unfavourable reactiveness to economic shocks.
- Stable – with a moderately low YUR, relatively resistant to economic shocks.
- Best – presenting low YUR and high resistance to economic shocks.

This allowed grouping regions into the ones presenting low levels of unemployment, which in the analysed period, despite unfavourable changes in the macro-environment, did not record strong shocks in the youth labour market, and into those whose labour markets were unstable and strongly reactive to shocks.

Inclusiveness can be defined in a static and long-term approach. From the static perspective, it describes the disproportions in the unemployment level of two groups, young people and adults, at a given point in time. In the long-term approach, the inclusiveness of labour markets expresses a certain hyper-reactiveness of markets to changes in the economy in respect to young people.

In order to identify the scale of static inclusiveness in individual years, the *YA* indicator was used, representing the relation between the youth unemployment rate aged 15-24 (*YUR*) and the unemployment rate of the population aged 25 and more (*AUR*):

$$YA = \frac{YUR}{AUR}. \quad (1)$$

[3] Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, Iceland, Norway, Switzerland, United Kingdom, Montenegro, North Macedonia, Serbia, Turkey.

It has been arbitrarily adopted that the indicator level over 2.5 reflects a significantly more difficult situation of young adults in the labour market, thus identifying problems with the inclusiveness of a given economy. The 2.5 level of YA inclusiveness, on the one hand, allows to identify a certain level of inequality in the involvement of young people and adults in the labour market, resulting, for example, from different attitudes as well as life and professional choices. On the other hand, this level is so high that exceeding it raises concerns about the disproportions regarding the availability of employment for young people (Bal-Domańska, 2022).

To identify the scale of inclusiveness in the long-term approach, the linear regression models were used, defined as a function of adult and youth unemployment rates:

$$YUR_t = a_0 + a_1 AUR_t + \varepsilon_t, \tag{2}$$

where the level of overall inclusiveness is defined by *α* coefficient, and presents the marginal change in *YUR* as response to change in *AUR*.

Non-inclusive regions react more strongly to the changes occurring in the regional economy in respect to young people (this may also refer to the improvement of the situation). In the case of youth unemployment, it is about stronger increases of the unemployment rate in response.

The estimation of *α* inclusiveness was performed on an unbalanced data panel for the regions for which half of the data was available. In this case, the methods used for filling the gaps were not applied. The fixed effect (FE) model (Greene, 2000), (Wooldridge, 2013), (Baltagi, 2005) was used to perform estimations at the level of groups of regions defined based on their reactiveness to economic shocks, whereas at the level of individual countries the estimates were made using the method of ordinary least squares (OLS) (Asteriou & Hall, 2016). The obtained results at the level of individual regions (Charts 7 and 8) were provided only for the assessments of structural parameters significant at the level of 0.05.

3. Young people in the European labour market

It is worth starting the assessment of the situation of young adults in the regional labour markets by outlining the problem. Figures 1 and 2 present the number of inhabitants of the surveyed 35 European countries, with an emphasis on young people aged 15-24. In recent decades, the reverse demographic trends have been observed compared to those occurring over the decades following the end of the Second World War. The problem of an ageing society is discussed in the source literature; it is worth highlighting the problem of the declining number of young people. In 2008, 593.6 million inhabitants lived in the 35 surveyed European countries, and 22 years later their number increased by 4.7% to 621.5 million people. At the same time, the number of people aged 15-24 decreased by 8.4% from 77.2 million to 70.7 million people.[4] The largest drops were recorded in many countries of Central and Eastern Europe, including Bulgaria, Estonia, Latvia, Lithuania and Poland, where the decrease in the number of young people in 2020, in comparison to 2008, exceeded 30%. For example, in Poland the number of young people in 2008 amounted to 5.9 million, and in 2020 it was only 3.8 million people (a 35.6% drop). The decrease in the number of young people is also visible in the age structure of the respective countries. In 2008, in 35 European countries the percentage of people aged 15-24 reached the level of 13.0%, whereas in 2020 it was only 11.4%. The occurring demographic changes are reflected in the situation on the labour market (e.g. declining availability of workers, limitations in the economic replacement of generations), and also translate into other social problems, such as those related to social security systems.

According to the estimates carried out for the purposes of the LFS study, the number of economically active people in the 15-24 age group in 35 European countries in 2008 amounted to 32.4 million people, and after 22 years a 15% decrease in the number of active labour market participants in this age group

[4] Within 28 countries of the European Union, the decline was even greater and the number of young people aged 15-24 decreased by 10.8% (along with a 2.6% increase in the total population of the EU28).

was observed at 27.5 million. Within this number, approximately 16.3% were unemployed. In 2008, the problem of youth unemployment affected 5.2 million inhabitants in the 35 European countries, and in 2020, 4.7 million, with the same unemployment rate (16.3%). It should be noted that, apart from the above mentioned years, the youth unemployment rate was clearly on the rise. This applies to the period of global economic difficulties, i.e. after the crisis of 2008, and in 2020, as a result of the COVID-19 pandemic.

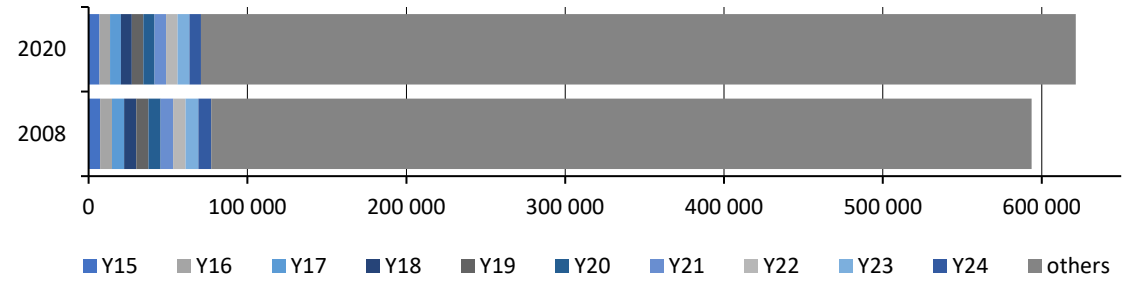

Fig. 1. Number of inhabitants by age group for 35 European countries in 2008 and 2020 (in thousands)

Source: author's compilation based on Eurostat data.

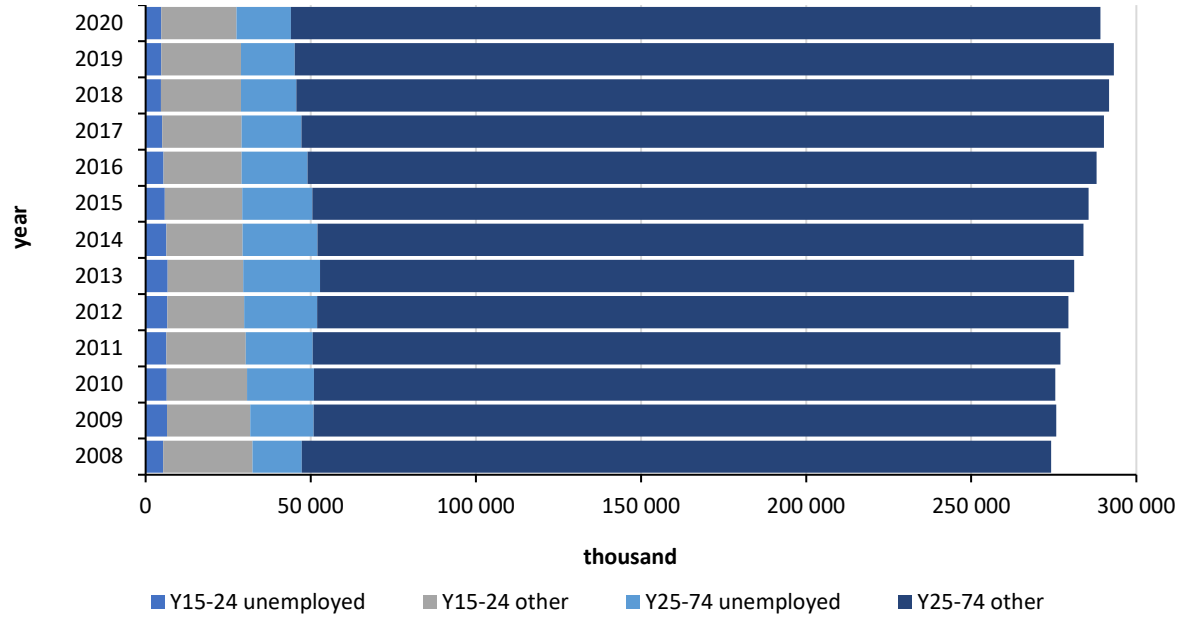

Fig. 2. Number of active population by status and age group for 35 European countries in 2008-2020 (in thousands)

Source: author's compilation based on Eurostat data.

The decreasing number of young people in the labour market raises the question about their situation in the labour market and their position in relation to their older counterparts. These two problems are addressed in the following sections of the article.

4. The reactiveness of regional labour markets to economic shocks

The inclusiveness of labour markets is related to the strength of response to changes in the regional economy. When observing changes in the labour market caused by the economic crisis of 2008, there had been a noticeable increase in the unemployment rate of young people since 2009, which reached its peak five years later in 2013, to be followed by an improvement in the subsequent years, up to and including 2019, and a repeated increase as a result of the COVID pandemic in 2020. As presented in

the previous section, when assessing the level of youth unemployment as well as the time and strength of the regional labour markets' response to shocks, four models can be distinguished: *highly responsive, reactive, stable* and the *best*.

When assessing the data in Figure 3, the differences are visible in the youth unemployment rate (*YUR*) in the regional labour markets in the particular groups of reactiveness, and range in terms of the average unemployment rate for the panel from 47% in the *highly responsive* group to 11% in the *best* group.

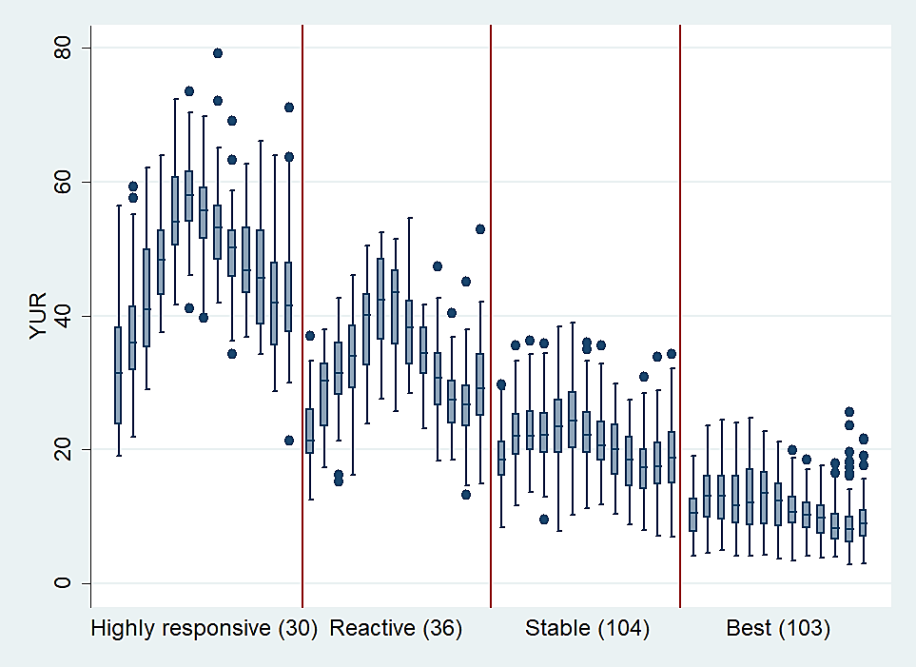

Fig. 3. Youth unemployment rates (YUR) by the reactiveness classes of the NUTS-2 European regions in 2008-2020

Note: the bars present the distribution of YUR values in the following years from 2008 (the first bar) to 2020 (the last bar of a particular class) among the regions regarding the reactiveness classes. The number of regions in the class is given in brackets.

Source: author's compilation based on Eurostat data (in STATA).

In the analysed period, a particularly difficult situation was characteristic for the markets of the *highly responsive* group, which included 30 NUTS-2 regions from Greece (10), Italy (6), Spain (9), French overseas regions (4) and Macedonia (Figure 4). The most disadvantaged regions in the group are the Spanish Ciudad de Ceuta located on the African headland forming the Strait of Gibraltar, and the Ciudad de Melilla in northern Africa as well as the Greek Dytiki Makedonia situated in the northern part of the country. On the other hand, one of the stronger regions in the group is the Italian region of Basilicata with the capital in Potenza, the Northern Spanish Principado de Asturias, and the Southern Spanish Región de Murcia with Murcia and Cartagena. The regions from the *highly responsive* group recorded the highest unemployment rate and the fastest increases observed in response to the 2008 crisis. The highest level of the group average unemployment rate for young people was recorded in 2013 and amounted to 58.1%. After the crisis, the *highly responsive* regions failed to restore their labour markets for young adults and, as a result, a significant increase in the unemployment rate was recorded (about 10 percentage points on average, ranging from 32.7% in 2008 to 42.2% in 2019 and 43.4% in 2020 in the group). There were a few exceptions to this rule (namely three French regions, *Martinique, Guyane, La Réunion*, Italian *Basilicata* and *Severna Makedonija* region, where the unemployment rate dropped from 56.4% to 35.6%); however, due to the level of youth unemployment, the situation in particular regions was still very difficult.

The second *reactive* group consists of 36 regions facing a difficult situation. This type of labour market existed in ten regions of northern Spain, eight central regions of Italy, and also three Greek regions, two regions each in Belgium, France, Croatia, Portugal, Romania, Slovakia, as well as individual regions in Poland, Turkey and Crna Gora (ME). The group average for *reactive* regions in 2008 was 22.2%, which in 2013 doubled to 42.3%, and in 2019 dropped to 26.7%. The basic difference between the *highly responsive* and *reactive* groups was in the level of the unemployment rate, which in the case of the latter was slightly lower. The common feature is a very strong increase in unemployment as a result of the crisis until and including 2013, as well as the gradual improvement in the labour market situation in subsequent years. In both groups, most regions had not managed to restore the pre-crisis condition by 2019. The exception regarded nine regions in *reactive* group, in five of which the unemployment rate in 2019 was significantly below the pre-crisis level of 2008 (i.e. Crna Gora (ME), Východné Slovensko (SK), Kontinentalna Hrvatska (HR), Jadranska Hrvatska (HR) and Podkarpackie (PL)).

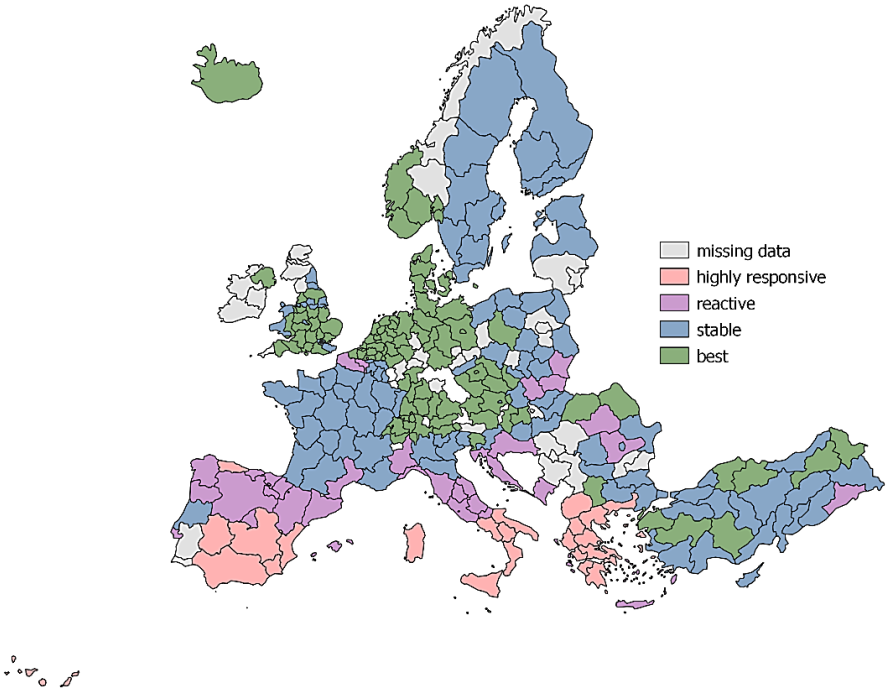

Fig. 4. Distribution of the selected NUTS-2 regions (except the overseas) by the reactiveness groups in 2008-2020.
Source: author's compilation based on Eurostat data.

Some careful optimism was brought by the analysis of Eurostat data, which shows that the recent years, despite the COVID-19 pandemic, have brought about an improvement on the most difficult labour markets in Greece and Italy: "the unemployment rate fell from 2019 to 2020 in four EU countries, with the greatest decrease recorded in Greece (-1.0 pp), followed by Italy (-0.8 pp), France (-0.4 pp) and Poland (-0.1 pp)"[5].

The next two types of regional labour markets (*stable* and *best*) are characterised by high resistance to economic shocks and the most favourable situation of young people. These are large groups covering 104 and 103 regions, respectively. The response of these labour markets to economic shocks was moderate, and the youth unemployment rate was among the lowest. In the *stable* group, the average unemployment rate in 2008 was 18.5%, in 2013 it increased to 24.0%, whilst in 2019 it dropped to 17.9%. In 50% of regions, the situation in 2019 was more favourable than in 2008. The regions of

[5] Internet service of Eurostat "Unemployment statistics and beyond", June 2021 (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics_and_beyond).

the *stable* group were in France, Sweden, Finland, Belgium, Poland, Turkey, Northern Italy, Great Britain, and others.

The 103 regions of the *best* group showed the most favourable situation of youth in the labour market. The regions of this group included mainly those in Germany, Great Britain, Belgium, the Czech Republic, Denmark, the Netherlands, Norway, Switzerland, Austria and Turkey, as well as individual regions in other countries. The average unemployment rate of young people in this group was at 10.3% in 2008, in 2013 it increased to 13.1%, and in 2019 it dropped to 8.8%. In 72% of the regions comprising this group, the situation was more favourable in 2019 than in 2008.

5. Inclusiveness of regional labour markets regarding young people

5.1. The *YA* type of inclusiveness – static approach

The level of inclusiveness of the European regions is diversified. When analysing the distribution statistics of *YA* inclusiveness values in static terms (Figure 5), a stable course of the minimum and average values as well as large changes in the maximum values are noticeable. The regions recording the highest level of inclusiveness show indicator values close to 1, indicating that the unemployment rate of young people and adults are at a similar level. The indicator median value was close to 3, suggesting that half of the regions have an unemployment rate of young people three times higher than that of adults. In the regions experiencing the most difficult situation, the level of non-inclusiveness reached the levels of *YA* indicator higher than 7 or even 10.

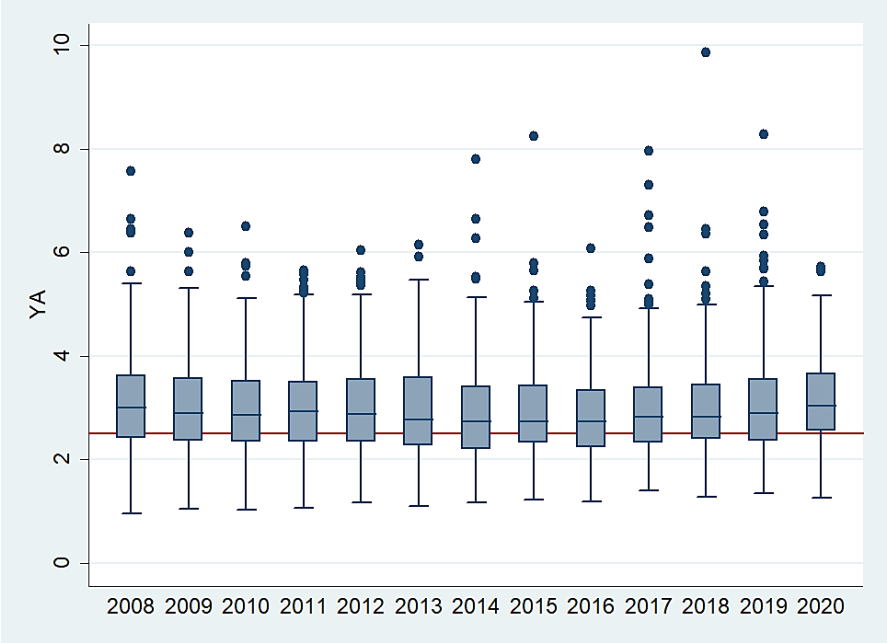

Fig. 5. *YA* inclusiveness of the NUTS-2 European regions in the period of 2008-2020

Note: The red vertical line marks the defined threshold of inclusiveness (2.5)

Source: author's compilation based on Eurostat data.

Interesting conclusions can be drawn when comparing the regional inclusiveness in the reactiveness classes defined in the previous section (see Figure 6). It is clearly visible that the two groups with an extremely different situation of young people in the labour market were characterised by the more favourable level of young people's inclusiveness in individual groups, i.e. the *best* and *highly responsive*, however, in the best group, a bigger intraregional differentiation of *YA* type inclusiveness was observed.

It is worth noting that for the *highly responsive* group, which is the group with the highest youth unemployment rates, the situation of young people and adults seems to be most similar. The average level of *YA* inclusiveness presents the value set at approximately 2.5. In 53.6% of cases (including regions and years), the value of the *YA* measure exceeded the level of 2.5, and in only one case exceeded the value of 5 – this was the Greek region of Voreio Aigaio covering three islands in the Aegean Sea off the Turkish coast: Lesbos, Ikaria and Chios, where the youth unemployment rate was 25% at that time, whereas the adult unemployment rate was 3.7%. The year 2013 brought about the highest level of unemployment rate and, at the same time, in many regions the situation of young people in the *highly responsive* group was the closest to that of adults.

In the *best* group, presenting a low level of unemployment rate, many regions should be classified as those with low inclusiveness. The value of the *YA* index was as high as 5 or even more in 4% of the cases covering regions and years, while in 54.1% of the cases it exceeded 2.5. The *best* group regions, characterised by the highest level of non-inclusiveness in the particular years, included mainly the following British regions: North Yorkshire (UKE2), Hampshire and the Isle of Wight (UKJ3), Shropshire and Staffordshire (UKG2), Lincolnshire (UKF3), Dorset and Somerset (UKK2), Herefordshire, Worcestershire and Warwickshire (UKG1), East Anglia (UKH1) as well as the Romanian region of Nord-Vest (RO11) with its capital in Cluj-Napoca.

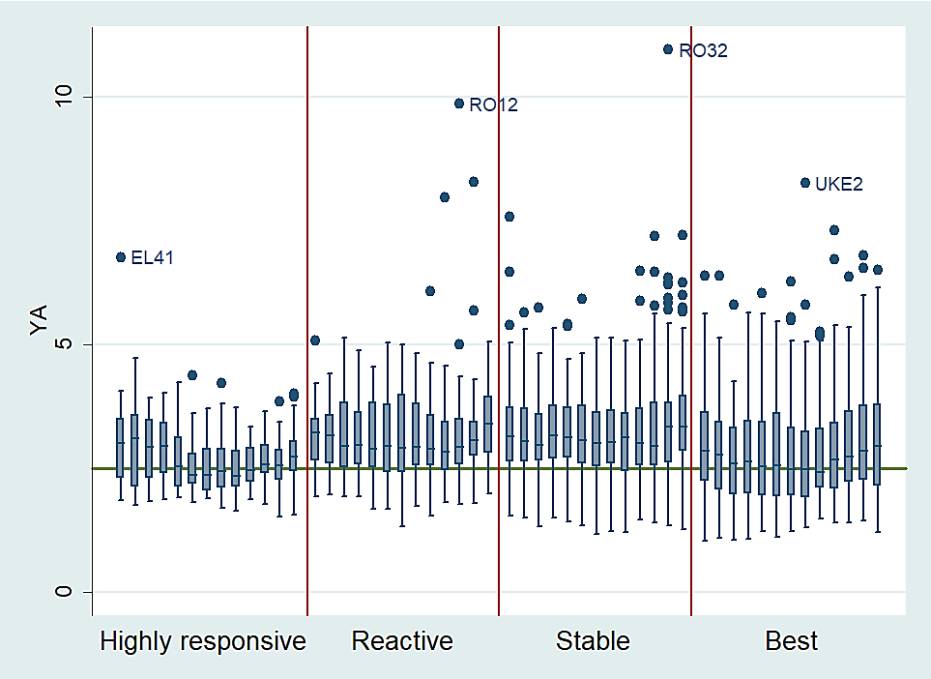

Fig. 6. *YA* inclusiveness by NUTS-2 European regions and the reactiveness classes in 2008-2020 (static approach)

Note: The bars present the distribution of YA values among regions within the reactiveness classes in subsequent years (from 2008 – the first bar) to 2020 (the last bar of a particular group). The green vertical line marks the defined threshold of inclusiveness (2.5).

Source: author's compilation based on Eurostat data (in STATA).

Overall in the *reactive* group of regions, in 78.2% of cases, the *YA* inclusiveness index was higher than 2.5, and for 2.6% higher than or equal to 5. The lowest *YA* inclusiveness in this group was recorded, among others, for the Romanian regions: Centru (RO12), Sud-Muntenia (RO31), and Liguria (ITC3) and Lazio (ITI4) in Italy. Similarly to the group of *highly responsive* regions, also in the *reactive* group, the deterioration of the labour market situation was associated with better youth inclusiveness. This means that in spite of the tendency to increased unemployment in times of crises, in many regions the situation of both young people and adults in the labour market was similar, resulting in an

improvement of the inclusiveness index. It is worth emphasising, however, that the differences in response to changes in youth unemployment between the particular regions in this class are quite clear.

The most extensive problems related to youth inclusiveness were recorded in *stable* markets, i.e. the regions with relatively low unemployment rates. In this group, in 80.0% of the cases, the *YA* type of inclusiveness index exceeded 2.5, and in 3.6% of the cases it was equal to or higher than 5. The regions characterised by the highest non-inclusiveness in this group included: Bucuresti-Ilfov (RO32), Warminsko-Mazurskie (PL62), Outer London-South (UKI6), Friuli-Venezia Giulia (ITH4), Mellersta Norrland (SE32), Emilia-Romagna (ITH5), West Wales and The Valleys (UKL1), Kent (UKJ4), Hatay, Kahramanmaras, Osmaniye (TR63). In the *stable* group, when observing the average values for the *YA* measure, it is difficult to show a correlation between the level of inclusiveness and the change in the labour market situation as a result of the 2008 crisis. In turn, a deterioration of the regional markets' inclusiveness in relation to young people was noticeable in the last two years of the study (2019-2020). What is more disturbing, the decline in inclusiveness was accompanied by a higher youth unemployment rate, which confirms the extremely low 'friendliness' of these job markets to the employment of young people.

5.2. The α type of inclusiveness – a long-term approach

For the purposes of the general assessment of the regional labour markets' inclusiveness, the *α* type of inclusiveness was defined, understood as the tendency of a given market to disadvantage young people in the labour market.

Table 1 shows the estimation results calculated for regions grouped by the class of reactiveness using the data panel covering 313 NUTS-2 regions of the selected European countries. The inclusiveness was estimated for all countries as well as for the groups of regions defined according to the reactiveness to economic shocks. In addition, the estimates for the regions included in group "0" were provided, which, due to numerous data gaps, could not be used in the basic analysis and classification according to the reactiveness level (although these results are burdened with the greatest error, they were included for comparison purposes with the other estimates).

Table 1. Estimation (robust) of regional *α* inclusiveness by the reactiveness group for NUTS-2 regions in 2008-2020

FE model	α_i inclusion coefficient	95% Conf. Interval		R^2			N *(i)*
				overall	between	within	
EUROPE (TOTAL regions)	**1.935*** **	1.826	2.044	0.779	0.825	0.631	4050 (313)
Highly responsive	**1.697*** **	1.559	1.836	0.595	0.388	0.720	390 (30)
Reactive	**2.008*** **	1.555	2.461	0.514	0.391	0.663	467 (36)
Stable	**2.187*** **	2.004	2.371	0.416	0.138	0.703	1352 (104)
Best	**1.733*** **	1.453	2.014	0.305	0.112	0.567	1339 (103)
(group with numerous data gaps)	**2.077*** **	1.900	2.254	0.586	0.655	0.550	502 (40)

Note: i – number of regions, N – number of observations (time, region).

Source: author's compilation based on Eurostat data (calculated in STATA).

The estimates of *α* inclusiveness allow for the formulation of conclusions convergent with the observations for *YA* inclusiveness. The regions included in the *highly responsive* groups presenting the highest levels of youth unemployment, and also the *best* groups with the lowest unemployment rates, turned out to be the most inclusive. Here, the level of *α* inclusiveness for the period 2008-2020 was estimated as below 2, which means that in the regions from these groups an increase in the adult unemployment rate by 1 (percentage point) was accompanied by a marginal increase in the youth

unemployment rate of less than 1.7 percentage points in the *highly responsive* group, and slightly above 1.7 pp in the *best* group. On the other hand, the greatest problems with inclusiveness were recorded in the *stable* and *reactive* regions, where the marginal youth unemployment rate increases in relation to the unemployment rate of adults exceeded 2.

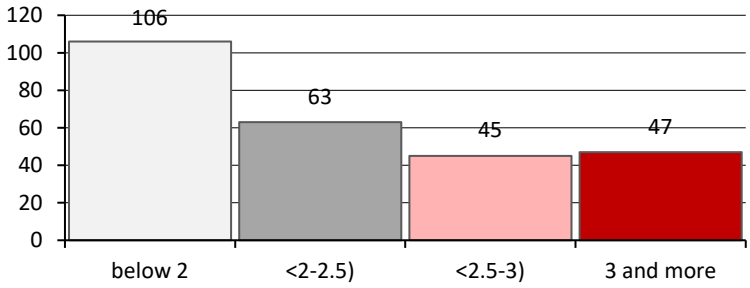

Fig. 7. Number of NUTS-2 regions by the α inclusion level (long-term approach)

Source: author's compilation based on Eurostat data.

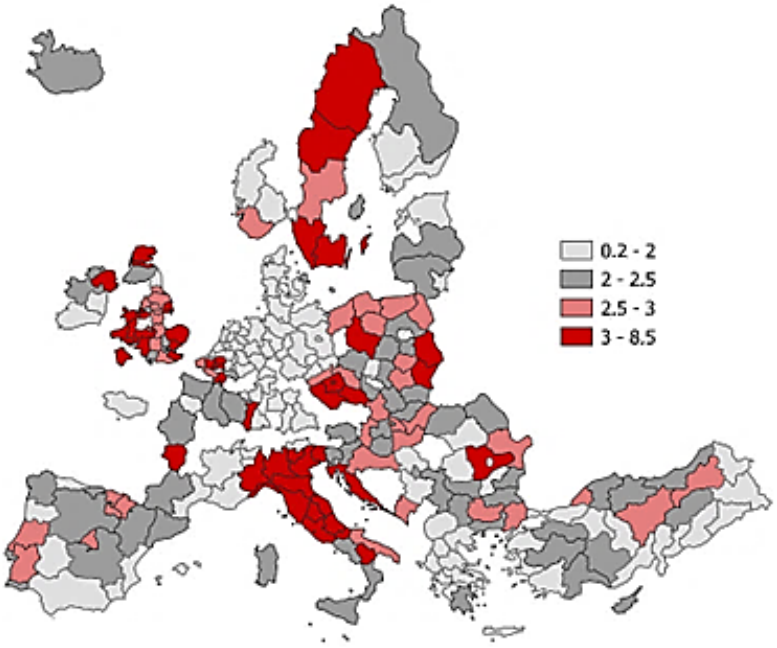

Fig. 8. Cross-regional distribution of the NUTS-2 European regions (except the overseas) by the α inclusion level (based on the α inclusiveness OLS estimates for individual region) (long-term approach)

Source: author's compilation based on Eurostat data.

Figures 7 and 8 show the OLS estimation results of *α* inclusiveness for individual regions for which the statistically significant estimates were obtained using the Student's t-test (*p value* < 0.05)[6]. In 40% of regions, the level of *α* inclusiveness takes values lower than 2, presenting a favourable situation. In the next 24% of the analysed regions, it does not exceed 2.5, and can be described as a moderately good inclusiveness level of the regional labour markets regarding young people. The most difficult situation was recorded in the Italian, Swedish, British, Polish and Czech regions. In 18% of them, the level of non-inclusiveness in the labour market exceeded 3.

[6] In this part of the study, the analysis was limited to the most reliable results confirmed at the significance level *p* below 0.05. In the next step, other 14 regions were included in the analysis for which the significant estimates at the level of 0.1 were obtained.

6. Final typology of the regional labour markets

The final assessment covered 246 regions for which the level of reactiveness to economic shocks was possible to determine, namely the groups (*highly responsive, reactive, stable, best*), and the level of *α* inclusiveness (below and above 2.5) was confirmed in the Student's t-test at the significance level not exceeding 0.1.

Figure 9 shows the final typology of European regions regarding the situation of young people in the labour markets.

The highest youth unemployment rates were observed in Southern Europe (Spain, Italy and Greece), among which the most difficult situation occurs in two Italian regions, which experienced serious problems related to the inclusiveness of young people (Basilicata, Puglia), along with the simultaneously highly responsive labour market also presenting a high unemployment rate.

Among all the regions from the analysed countries, the Italian regions had the most difficult situation in terms of youth inclusiveness. Southern Italy is characterised by high unemployment, while Northern regions have lower youth unemployment rates, however, they are still struggling with the problem of non-inclusiveness of young people, who face greater barriers in entering the labour market than those over 25 years of age.

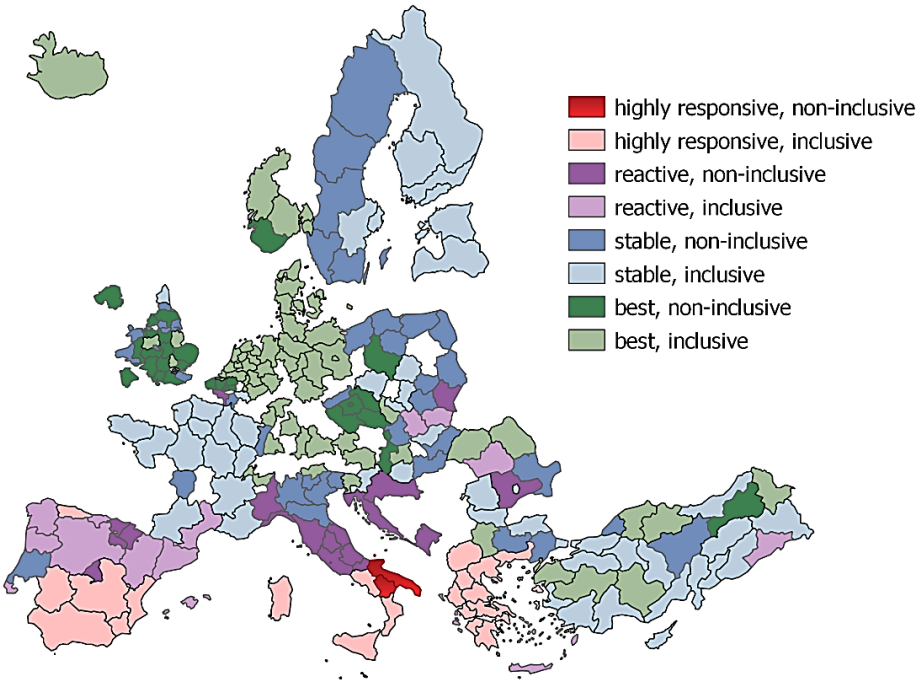

Fig. 9. Cross-regional distribution of NUTS-2 European regions (except the overseas) by the reactiveness and α inclusion classes – final typology

Source: author's compilation based on Eurostat data.

The nature of the problems experienced by the Spanish regions is somewhat different. The basic problem here is access to jobs for both young people and adults. From among 18 Spanish regions included in the analysis, all of them belonged to the two weakest groups of *highly responsive* and *reactive* regions, and only four regions from the *reactive* group were dealing with the problem of non-inclusiveness regarding young people (Comunidad de Madrid, País Vasco, Comunidad Foral de Navarra, La Rioja). A similar situation can be observed in Greece (all the regions belonged to the *reactive* and *highly responsive* group and the α inclusiveness coefficient did not exceed 2.5 in any of the cases). The main problem of the markets in Spain and Greece is the lack of available jobs, whereas, in Croatia, for example, the absence of jobs affects young people in particular.

In the other countries, most of the regional labour markets belong to the *stable* and *best* group characterised by the relatively lower unemployment rates for young people. Nevertheless, many of these markets are non-inclusive for young people, among which the following can be indicated from the *stable* group: Poland, Sweden, parts of Hungary, and from the *best* group: Ireland, the Czech Republic, Great Britain and Belgium.

Finally, it is worth pointing to the countries whose regional markets are generally characterised by low unemployment and high inclusiveness of young people. These regions can be found in Germany, Austria, Denmark, the Netherlands, as well as France, Iceland and Norway.

7. Discussion and limitations

The paper presents the continuation of the research conducted at country level as presented in the paper by (Bal-Domańska, 2022), which includes in-depth analyses on the regional NUTS-2 level of 35 European countries. The previous subject literature only indicated the problem by presenting estimation results for the general assessment of the relation between youth and adult unemployment (Choudhry et al., 2013); Perugini & Signorelli, 2010). In the presented approach the concept of inclusiveness was developed, and based on this the assessment of the youth labour market was characterised.

Comparing the obtained results of other authors (Choudhry et al., 2013); (Perugini & Signorelli, 2010), it can be confirmed the average level of long-term inclusiveness had the value of 2. However, the in-depth analysis for countries and regions indicates significant differences in time and between regions.

A certain limitation for the presented results may be the difficulty in combining a coherent methodology for estimating the level of inclusiveness for particular regions with the possibility of their individual adjustment to individual situations (data). As a result, the degree of fit regarding the estimated models for specific regions (measured by the coefficient of determination R^2) varies between regions from 0.34 up to 0.98.

One of the practical dimensions of the presented analysis is highlighting the problem of including young people in the labour market. This issue should be of particular importance even in those labour markets which can be considered ‘good’, due to low unemployment rate and a relatively smaller scale of the problem. The importance of the problem of labour markets’ non-inclusiveness regarding young people becomes even more significant when approached in terms of the first job both for the professional career of young employees and their family life. From the social perspective, one should remember about the shrinking population of young workers in many regional labour markets.

8. Conclusions

Despite the declining number of young people in European countries, their situation in the labour market is not improving, but is even getting worse. In 2020, compared to 2008, the *YA* type inclusiveness index deteriorated in 53% of the analysed 313 NUTS-2 regions. However, in 70% of the regions it exceeded 2.5, which means that the unemployment rate of young people was at least two and a half times higher than the unemployment rate of adults. The problem of non-inclusiveness of the labour markets regarding young workers is a problem affecting the weakest markets presenting high unemployment rates, and also, to a similar or even greater extent, the markets featuring low youth unemployment rates. Obviously, the scale of the problem in this case is less ‘visible’ for the environment, however, it should be assumed that there still exist mechanisms unfavourable for the professional activity of young people in the economy, society or the cultural life.

When analysing the inclusiveness of the regional labour markets regarding young people, it should be emphasised that in many cases the borders of non-inclusive regions overlap with the national borders. This refers to Poland, the Czech Republic, Great Britain, Belgium, Croatia and Italy. In these countries, regardless of the unemployment rate level, there are visible problems affecting young workers who face stronger barriers in entering the labour market than people over 25 years of age. In these countries, there is a clear need to carry out activities at national level that would enable diagnosing problems and finding ways to solve them. The potential barriers to youth employment occurring in the market may include: too high employment costs of young people (e.g. due to the absence of preferences in the tax and social security system); unfavourable working conditions (e.g. lack of access to flexible forms of work); young workers' inadequate competencies in meeting the market needs; poorly developed training market; insufficient number of enterprises (usually medium and large) offering diversified jobs, thus allowing the employment of people presenting different abilities, qualifications, experience and, at the same time, ready to take in and train young workers; no support system for small and medium-sized enterprises (SMEs) employing young people. It seems that the problems of young people in the labour market may intensify in markets dominated by the SME sector. For companies in this sector, a young employee may be less attractive because of no experience, low sense of loyalty to the employer, uncertainty regarding the length of employment (e.g. related to young people looking for a job suitable for them or having plans for expanding their family). For SMEs, the time and cost of a young employee induction and training is relatively high. These companies frequently do not include departments responsible for training and implementation at work, and this task is performed by other units also carrying out other tasks on a daily basis. Additionally, there may occur barriers arising on the part of young people, such as the absence of motivation to take up employment, too low salaries (weakening the motivation to take up a job), lack of appropriate qualifications, no relational capital, difficult health or family situation, the need to take care of the family members. These barriers may have a strong cultural background, and overcoming them requires the consistent implementation of new behaviour models as well as professional attitudes.

Next to countries with similar regional labour problems, there are those with strong regional differences in the situation of young people in the labour market, e.g. Portugal and Romania, in which almost every region belongs to a different group of responsiveness. In this case, problems should be further looked for in structural differences in the development of regions.

Summing up the answers to the research questions, it should be pointed out that the differences in the level of reactiveness of regional labour markets to shocks are visible. About 24% of the regions were classified as *highly responsive* or *reactive*. About 76% of the regions belong to groups which, compared to other regions, concentrate those with the highest resistance to economic shocks, manifested by lowest increases in the unemployment rate of young people during periods of crises, and characterised by the relatively lowest rate of unemployment among young people.

Nevertheless, the fact that regions belong to groups with a relatively high resilience of the labour markets to economic shocks does not mean that there is not a problem of non-inclusiveness. One of the most disadvantaged groups are young people from two kinds of regions: with a moderate level of resilience of labour markets to shocks (*stable* group), and moderate reactivity (*reactive* group). In the case of regions from the group with one of the highest labour market reactivity to shocks (*reactive*) and, at the same time, high unemployment rate, both economically active groups (young and adult) experience serious problems with entering the labour market. These regional economies require structural changes that would increase the total number of available jobs. In the *stable* group, the good condition of the market does not translate into a good position for young people (reflected by unemployment rate). These markets need to introduce changes to increase the level of inclusiveness of young workers.

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Received: December 2022, revised: March 2023