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Analysis and Assessment of the 'Working Poor' Phenomenon among Young People in the European Union[1]

Abstract: The article discusses the 'working poor' phenomenon among young people. This phenomenon is associated with the labor market on the one hand and poverty on the other. It is an interesting object of study, because currently more and more people are threatened by poverty in the European Union, even though they are included in the basic social institution, which is the labor market. The aim of this study was to show the relationship between the work and the problem of poverty in the context of the working poor phenomenon, and the analysis and evaluation focused on determining the level and structure of the working poor among young people in the European Union. The situation of working poor can be presented thanks to the results of the European Union Statistics on Income and Living Conditions. This study aims to collect current and comparable data on the distribution of income and social integration at the transnational level in the EU, including: income and living conditions, poverty and social exclusion, education, professional activity and health, as well as childcare and housing conditions. Unfortunately, the EU-SILC study (although regularly implemented) is not always a complete source of data, because every year other aspects of socio-economic life are explored. Nevertheless, the information obtained from the Eurostat database and EU-SILC studies, makes it possible to carry out comparable statistical analyzes, in this case for the working poor group. Based on the statistical analysis and assessment of the situation of young people included in the working poor group in the EU, based on Eurostat database and EU-SILC studies, it can be stated that the problem of poor and poverty exist among them. It undermines the view that employment is a factor that counteracts poverty and that full employment is the best remedy for poverty and social exclusion.

Keywords: working poor, labor market, work, poverty, European Union

JEL: E24, I32, J28

1. Introduction

The concept of 'working poor' is an interesting compilation of two seemingly contradictory terms, i.e. 'work' and 'poor'. In the labor market and employment policy, this phenomenon is a relatively recent subject of both theoretical and empirical research (Frazer, Marlier, 2010: 23). The main reason for that is the recent focus on the problem of poverty and social exclusion among disfavored people in the labor market. At present, due to the increasing number of working people who are at the same time threatened or already suffering from poverty, the phenomenon of working poor is increasingly discussed in the labor market and employment policies. This is why this paper pays attention to working people who, even though they have a job, face the same issues as the unemployed. In view of the above, the purpose of this paper is to present the relationship between work and the problem of poverty in the context of the working poor phenomenon. In analyzing and evaluating the researched phenomenon, attention was focused on defining the level and structure of working poor among young people in the European Union.

2. Methodology of research and the course of the research process

The situation of the working poor can be presented thanks to the data obtained from the Eurostat database and the research results of the European Union Statistics on Income and Living Conditions[2]. In order to achieve the research objective, i.e. to present the interrelationship between work and poverty among the working poor in the European Union, a method of analyzing source material for the studied phenomenon (Section 3. Work and poverty – terminological and methodological problems) and statistic and taxonomic method were used (Section 4. Working poor in the light of selected statistics). Among the aforementioned methods, the taxonomic analysis deserves the greatest attentions, as it is multidimensional and based on the method of grouping the analyzed EU Member States into clusters using the Ward agglomeration method:

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[2]   The European Union Statistics on Income and Living Conditions (EU-SILC) was first carried out in 2003 on the basis of the so-called gentlemen agreement between Eurostat and seven European countries (Austria, Belgium, Denmark, Greece, Ireland, Luxembourg and Norway). Since 2004 it has been implemented in most EU Member States. The countries that will be examined in this study implemented the regulations of Parliament and the Council and of the European Commission in 2005 (except for Bulgaria and Romania which have been taking part in it since 2007). It is used to monitor social policy through the so-called 'pen method of co-ordination' (OMC). For more on OMC, see 'The Open Method of Coordination: a New Policy Paradigm?' (Dehousse, 2003).

1) subject area: 28 EU Member States (EU-28) – cluster analysis using the Ward tree diagram concerns both 'old' and 'new' EU Member States[3],
2) time span: three years: 2005, 2010 and 2015 – in the case of all analyzed variables, the statistics data are available for the aforementioned years[4],
3) scope of work: indicators reflecting the relationship between work and the problem of poverty are identified and highlighted in Section 4: Working poor among young people in the European Union in the light of selected statistics (taxonomic analysis)[5].

The first part of the article is devoted to the problem of defining the working poor phenomenon and the presentation of indicators needed to demonstrate the similarity between EU Member States in terms of size and changes in the risk of poverty among young working poor in recent years. The second part includes taxonomic analysis and analysis of statistical data with drawn conclusions.

3. Work and poverty – terminological and methodological problems

A literature review dealing with issues of work and poverty indicates that these areas interact with one another[6]. The overview of the problem of the working poor definition was described in The Oxford Handbook of the Social Science of Poverty entitled *Employment and the Working Poor.* While the 'working poor' may be quite easily portrayed as "a person who is a worker and who is poor", it is a long way from the 'obviousness' of the notion to an operational definition – that is, "one that can be used to measure the extent of the problem" (Gautié, Ponthieux, 2016: 488). Therefore, since 'working poor' is a concept combining 'work' and 'poverty', the operational definition necessarily depends on the criteria used to define each of these terms – this conceptual dilemma is presented in Table 1.

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3   Due to the editorial requirements limiting the length of the article, there is no separate analysis and evaluation of the phenomenon under consideration for the 'old' Member States (EU-15) and the 'new' Member States (EU-10/EU-12/EU-13). Note: EU-15 – EU Member States that joined the integration group until 1995; EU-10 – EU Member States that joined the integration group in 2004; EU-12 – EU Member States that joined the integration group between 2004 and 2007; EU-13 – EU Member States that joined the integration group between 2004 and 2013.

4   The completeness of the data is fully ensured by usage, in justified cases (lack or low reliability of data), data from the following year.

5   The comparability and reliability of data will be ensured by using only one source, the Eurostat database, for all diagnostic variables.

6   More on this topic in publications: *The 'Working poor' Phenomenon in Europe – a Taxonomic Analysis* (Cymbranowicz, 2018: 66–83).

Table 1. Definitions of the 'working poor' in the literature and official statistics

Country	Source	Work definition	Poverty threshold
European Union	Eurostat	Employed at least 15 hours/ Most frequent activity status in the last year New indicator: in-work at-risk-of-poverty rate individuals classified as employed (according to their most frequent activity status, hence at least 6 months in the labour market in the previous year)	Low-income threshold: less than 60% of the median equivalised household income (relative monetary poverty) At risk of poverty: individuals living in a household with an equivalised disposable income below 60% of the median
France	Institut National de la Statistique et de l'Economie (INSEE)/Academics/ National action plan for Social Inclusion 2001–2003/2003–2005	Individuals who have spent at least six months of the year on the labour market (working or searching for a job)/Working at least six months/Have had a job for at least one month during a year	Low-income threshold: less than 50% (60–70% occasionally) of the median equivalised household income (relative monetary poverty)
Belgium	National Action Plan for Social Inclusion	Individuals who have spent at least six months of the year on the labour market (working or searching for a job)/Working at least six months	Low-income threshold: less than 60% of the median equivalised household income (relative monetary poverty)
Switzerland	Swiss Federal Statistical Office/Academics	All 'active' individuals, regardless of the number of hours they work/All individuals working full-time (i.e. 36 hours or more weekly/At least one individual having a lucrative activity for at least 40 hours a week (one full-time job) New indicator: individuals who work and live in a household in which the overall volume of work (of all members) amounts to at least 36 hours a week	Administrative flat rates of social security modified (Monetary administrative poverty)

Country	Source	Work definition	Poverty threshold
United States of America	US Census Bureau (USCB)	Total hours worked by family members greater than or equal to 1,750 hours (44 weeks)	Federal Poverty Line (Absolute monetary poverty)
	US Bureau of Labor Statistics (USBLS)	Individuals who have spent at least six months (27 weeks) of the year on the labour market (working or searching for a job)	Federal Poverty Line (Absolute monetary poverty)
	US researchers in general	Adults working, on average, at least half time (approximately 1,000 hours)/Definition of USCB and USBLS (see above)	Less than 125–200% of Federal poverty line (Absolute monetary poverty)
Canada	National Council of Welfare (NCW)	More than 50% of total family income coming from wages, salaries or self-employment	Statistics Canada's Low-income cut-offs (LICOs) (Absolute monetary poverty)
	Canadian Council on Social Development (CCSD)	Adult members have, between them, at least 49 weeks of either full-time (at least 30 hours a week) or part-time work	CCSD relative low-income threshold (Relative monetary poverty)
	Canadian Policy Research Networks (CPRN)	Full time, full year	Relative low-income threshold; less than $20,000 per year (Relative monetary poverty)
Australia	Social Policy Research Centre	All 'active' individuals, regardless of the number of hours they work	Henderson absolute poverty line (Absolute monetary poverty)

Source: Crettaz, Bonoli, 2010: 6–8

This brief review shows how researchers have dealt with the definitional issues concerning 'work' and 'poverty'. Obviously, it is not exhaustive and it mainly focuses on official definitions. However, on this basis it can be concluded that there is a total lack of agreement among academics and official organs on the definition of 'working poor'.

As shown in Table 1, there are a lot of different points of view and possibilities to form a conceptual framework of the 'working poor' in the literature and official statistics, but the vast majority of them show that:
1) personal characteristics (gender, age and education),
2) job characteristics (professional status, full-time or part-time work, type of employment contract, months worked in a year etc.),
3) the household context (single parenthood/person, households with dependent children or without etc.),

define the extent to which the population is affected by the in-work poverty risk. The roots of in-work poverty lie in the interaction of a variety of factors at different levels. This is confirmed by the recent research results carried out by Eurofound (European Commission, 2010; Eurofound, 2010; 2017) and European Commission (European Commission, 2012). According to Eric Crettaz and Giuliano Bonoli, there are three mechanisms or immediate causes of 'working poor' status, i.e. low earnings, low labour force attachment and large family size (Crettaz, Bonoli, 2010: 6–8). Emilia Herman, quoting other researchers, states that different studies show one thing – 'in-work poverty' can be the result of various dysfunctions on the labour market, job instability, involuntary temporary and part-time work, reduced salaries, household structure of the person working, etc. (Herman, 2014: 427–436).

So far the phenomenon of working poor has gained only one official definition – according to U.S. The Bureau of Labor Statistics, people who belong to this group are the working-class people who for at least six months (i.e. 27 weeks) during the recent year have been active on the labor market (working or job-seeking) and who live in a poorly-owned household (US Bureau Of Labor Statistics, 2016: 28). In turn, according to the European Foundation for the Improvement of Living and Working Conditions (Eurofound): 'working poor are defined as workers living in households where at least one family member is working and whose income (including social benefits and after taxes) remains below the poverty line' (Eurofound, *Pracujący ubodzy...*). In contrast, the European Statistical Office (Eurostat), according to the adopted methodology, defines the group of working poor as those who:

1) declare having had employment status for more than 6 months, confirmed by their income reports or have been working for at least 7 months a year,
2) have a household, where the total income after taxes and other public contributions, left for disposal or saving, divided by the number of household members, is less than 60% of the national average (i.e. exceeds the poverty threshold) (Eurostat Statistics Explained, 2016).

Due to the fact of the further usage of the statistical data from Eurostat for the purposes of this study, the definition of working poor proposed by the European Statistical Office is adopted.

This analysis and assessment of the working poor phenomenon in the European Union concerns young people. Due to:

1) no statistical data for this age group in the context of selected indicators reflecting the relationship between work and poverty and,
2) the specificity of the socio-occupational group to which young people belong (they form a specific category in the labor market, as they learn and/or work),

in this paper the term 'young people' is narrowed down to cover individuals from 18 to 24 years of age.

4. Working poor among young people in the European Union in the light of selected statistics

With regard to the analysis and assessment of the working poor phenomenon among young people in the EU-28, important information is provided by the risk of poverty rate, since it allows to state how large is the group of people who, despite having a job, are *de facto* poor. In recent years, the number of people (18–24 years) who are working and receiving remuneration which is not high enough to meet their needs, has increased (see Figure 1). The highest percentage of people at risk of deprivation of needs was recorded in Romania (33.5%) and the lowest in the Czech Republic (1.8%). Against this background, the situation of people working in Poland is favorable, as the risk of poverty among employed persons is estimated at 10.3%, i.e. below the EU-28 average (12.4%).

EU-SILC data show that overall in the EU-28, in both the so-called 'old' and 'new' Member States, pauperization was rather the domain of the youngest group (18–24 years). However, by analyzing the percentage of working people at risk of poverty in each country, the situation is no longer so unequivocal. By analyzing the data presented in Table 2 it can be stated that workers were struggling with the problem of working and poverty:
1) to the greatest extent – the citizens of Romania (in all three age brackets),
2) to the slightest extent – citizen of the Czech Republic (18–24 years), Finland (25–54 years) and Denmark (55–64 years).

It is worth pointing out that, in countries such as Ireland, Croatia, Poland and Portugal (+/–1.5 p.p.), the percentage of working poor was similar in all three age groups.

In addition, based on the EU-SILC studies, it can be concluded that the working poor phenomenon is slightly correlated with gender (see Table 3). At the beginning of the first decade of the 21st century Bradshaw and Finch (2003: 513–525) and also Daly and Rake (2003: 68–93) claimed that 'poverty is feminized'. Moreover, EU-SILC research currently shows that in the EU-28 men are more likely to suffer from this problem (see Table 3). This tendency is typical for the most Member States, because in only 2 out of 28 (i.e. in the Czech Republic and Germany) this indicator was higher for women. In general, these differences are not large – in 2015 they were in the extreme case ranging from 0.2 p.p. to 13.6 p.p. The causes of this state of affairs can be traced to specific social patterns of men and women (Leśniak-Moczuk, 2015: 62–83). In this context, interesting conclusions are drawn from the analysis of the differences between the distribution of the proportion of employed persons with disposable income below 60% of median equivalent by age and sex. It can be concluded that men in all three analyzed age groups are relatively more likely at risk of poverty than women (see Table 3). The largest dichotomy was recorded in the 18–24 age group: in Denmark (13.6 p.p. for men) and in Sweden (7.3 p.p. for women). The smallest dichotomy was recorded in the 25–54 age group: in Bulgaria (0.2 p.p. for men) and Luxembourg (0.2 p.p. for women).
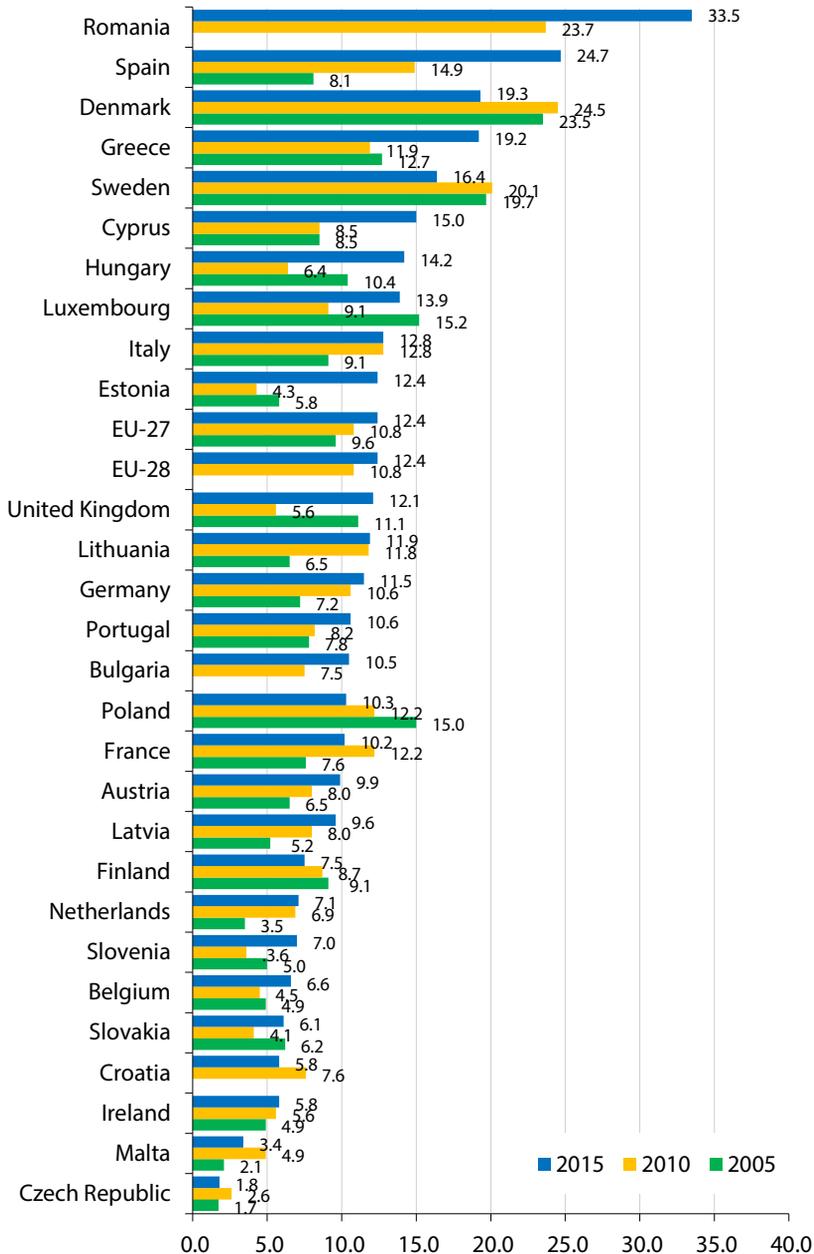
Note: BG, HR, RO, EU-28 – no data for 2005 (the third column).

Figure 1. In-work at-risk-of-poverty rate by age (18–24) in the EU-28

Source: own study based on: Eurostat database, In-work at-risk-of-poverty rate by age and sex
– EU-SILC survey (ilc_iw01)

Table 2. In-work at-risk-of-poverty rate by age (18–24) in the EU-28

Category	18–24	25–54	55–64	18–24	25–54	55–64	18–24	25–54	55–64
	2005			2010			2015		
EU-28	:	:	:	10.8	8.2	7.1	12.4	9.5	8.6
EU-27	9.6	8.0	7.9	10.8	8.3	7.1	12.4	9.5	8.6
Belgium	4.9	4.0	3.1	4.5	4.5	4.2	6.6	4.3	5.0
Bulgaria	:	:	:	7.5	7.9	7.0	10.5	7.8	7.1
Czech Republic	1.7	3.9	2.3	2.6	4.1	2.2	1.8	4.3	3.4
Denmark	23.5	4.1	1.5	24.5	5.7	3.5	19.3	4.7	2.5
Germany	7.2	4.5	5.7	10.6	6.9	6.0	11.5	9.5	9.5
Estonia	5.8	7.9	6.7	4.3	7.1	6.0	12.4	10.3	9.8
Ireland	4.9	5.7	8.1	5.6	4.8	8.3	5.8	4.5	5.9
Greece	12.7	11.7	19.9	11.9	13.5	16.6	19.2	12.6	16.8
Spain	8.1	10.8	11.3	14.9	10.9	8.4	24.7	13.6	8.8
France	7.6	5.9	5.8	12.2	6.1	6.1	10.2	7.3	7.2
Croatia	:	:	:	7.6	6.2	5.5	5.8	6.0	4.8
Italy	9.1	9.0	6.9	12.8	9.9	6.6	12.8	11.9	10.2
Cyprus	8.5	6.4	5.4	8.5	7.8	4.5	15.0	8.8	9.1
Latvia	5.2	9.8	9.1	8.0	10.2	8.2	9.6	9.9	7.6
Lithuania	6.5	10.8	8.5	11.8	13.4	9.5	11.9	10.4	8.1
Luxembourg	15.2	9.8	4.9	9.1	11.4	4.5	13.9	11.6	10.0
Hungary	10.4	8.9	6.1	6.4	5.8	2.6	14.2	9.0	9.2
Malta	2.1	5.1	2.0	4.9	6.3	3.9	3.4	6.0	2.8
Netherlands	3.5	5.9	6.9	6.9	5.0	5.0	7.1	5.0	4.5
Austria	6.5	6.9	6.0	8.0	7.5	6.0	9.9	7.9	5.6
Poland	15.0	13.9	11.9	12.2	11.5	10.4	10.3	11.2	11.8
Portugal	7.8	11.2	15.7	8.2	8.7	16.5	10.6	10.7	12.1
Romania	:	:	:	23.7	16.6	21.8	33.5	17.9	17.4
Slovenia	5.0	4.5	6.0	3.6	5.4	5.2	7.0	6.4	8.6
Slovakia	6.2	9.7	3.7	4.1	5.9	4.7	6.1	6.4	4.3
Finland	9.1	3.4	3.4	8.7	3.2	3.8	7.5	3.3	2.9
Sweden	19.7	4.9	2.8	20.1	5.9	3.5	16.4	7.0	4.3
United Kingdom	11.1	7.7	8.4	5.6	6.9	6.2	12.1	8.1	7.5

Note: (:) – no data for 2005.

Source: own study based on: Eurostat database, In-work at-risk-of-poverty rate by age and sex
– EU-SILC survey (ilc_iw01)

The level and scale of poverty can also be analyzed and assessed in terms of the ability to meet various life needs. For this purpose, Eurostat uses many measures, with the most common one being the index of deferred material deprivation[7], reflecting the proportion of people in households who point out the inability to meet at least 4 out of 9 life needs, deemed desirable or even necessary for a dignified life in the European conditions.

Table 3. In-work at-risk-of-poverty rate by age and sex in the EU-28

Category	18–24		25–54		55–64	
	Males	Females	Males	Females	Males	Females
EU-28	12.5	12.3	10.3	8.6	8.9	8.1
EU-27	12.5	12.3	10.3	8.6	9.0	8.1
Belgium	5.4	8.2	4.1	4.5	5.3	4.6
Bulgaria	14.3	3.4	7.9	7.7	8.1	6.2
Czech Republic	1.0	3.4	3.9	4.7	3.1	3.9
Denmark	24.1	10.5	5.3	4.2	3.3	1.7
Germany	9.6	14.5	9.0	10.1	8.1	10.8
Estonia	14.2	10.3	10.7	9.9	10.8	9.0
Ireland	5.8	5.8	5.2	3.7	6.5	5.1
Greece	21.7	16.5	14.5	10.0	17.8	15.1
Spain	23.5	26.1	14.6	12.5	9.8	7.4
France	12.5	7.0	7.9	6.6	7.6	6.7
Croatia	7.3	3.7	7.2	4.6	5.1	4.2
Italy	13.4	11.8	13.5	9.7	11.1	8.8
Cyprus	16.5	13.7	9.1	8.5	8.1	10.4
Latvia	8.3	11.1	9.5	10.3	7.8	7.4
Lithuania	16.4	3.9	12.3	8.6	5.7	10.3
Luxembourg	15.5	11.6	11.5	11.7	11.5	8.2
Hungary	15.5	12.2	9.5	8.4	9.1	9.3
Malta	4.2	2.5	7.6	3.6	3.3	1.3
Netherlands	4.4	10.6	6.0	4.0	3.9	5.3
Austria	8.0	12.8	8.6	7.1	7.1	3.2
Poland	11.6	8.2	12.2	10.2	14.4	8.0
Portugal	11.6	9.4	11.3	10.1	13.0	11.1

7   According to the definition adopted by Eurostat, 'material deprivation' is a forced inability (and not the abandonment due to ones choice) to meet 4 of 9 needs, i.e.: 1) the payment for a week-long holiday of all household members once a year, 2) consumption of meat, fish (or their vegetarian equivalent) every other day, 3) heating the apartment as needed, 4) coverage of unexpected expenses (corresponding to the monthly relative poverty rate, adopted in the country in the year preceding the survey), 5) timely payment of fees Related to housing, repayment of installments and loans, 6) possession of a color television, 7) possession of a car, 8) possession of a washing machine, 9) possession of a phone (fixed or mobile) (System Monitorowania Rozwoju STRATEG, 2016).

Category	18–24		25–54		55–64	
	Males	Females	Males	Females	Males	Females
Romania	35.6	30.5	20.7	14.0	17.0	18.0
Slovenia	6.5	8.8	7.6	5.1	9.3	7.4
Slovakia	5.8	6.6	6.7	5.9	5.9	2.3
Finland	11.4	3.6	3.7	3.0	3.4	2.5
Sweden	12.8	20.1	8.3	5.7	5.2	3.3
United Kingdom	12.4	11.9	9.0	7.0	7.9	7.0

Source: own study based on: Eurostat database, In-work at-risk-of-poverty rate by age and sex
– EU-SILC survey (ilc_iw01)

Table 4. Severe material deprivation rate among the employed persons by age in the EU-28

Category	18–24	25–54	55 and over	18–24	25–54	55 and over	18–24	25–54	55 and over
	2005			2010			2015		
EU-28	:	:	:	7.5	5.4	4.2	6.9	4.8	4.1
EU-27	10.6	7.2	5.9	7.4	5.4	4.2	6.8	4.8	4.1
Belgium	2.7	2.8	3.1	5.2	2.3	1.3	6.3	2.1	0.9
Bulgaria	:	:	:	39.2	33.3	34.2	24.9	21.4	22.7
Czech Republic	9.6	6.9	4.0	6.7	3.6	2.7	5.4	3.0	2.2
Denmark	5.7	1.5	0.4	6.1	0.8	0.4	7.6	1.8	1.1
Germany	4.7	2.8	1.5	3.1	2.8	1.7	3.5	2.3	1.7
Estonia	12.6	7.6	6.0	10.4	5.1	2.4	1.8	2.1	2.1
Ireland	1.4	1.5	1.0	1.4	1.5	0.6	7.6	3.4	1.2
Greece	13.8	9.0	13.0	13.5	8.5	7.5	28.6	15.5	15.6
Spain	3.4	2.8	1.5	6.8	3.0	2.2	5.7	4.0	2.0
France	6.5	3.2	2.2	5.0	3.7	2.8	3.0	2.6	2.6
Croatia	:	:	:	18.8	9.6	7.4	9.7	7.3	8.3
Italy	6.1	4.0	3.4	7.1	4.6	3.6	12.5	7.6	6.5
Cyprus	18.0	9.8	9.7	17.1	9.1	6.1	18.3	11.9	10.3
Latvia	35.4	30.3	28.6	22.7	18.3	16.1	12.1	9.6	10.6
Lithuania	28.2	23.8	25.1	13.4	12.1	14.9	15.7	6.8	6.6
Luxembourg	0.7	0.9	0.1	0.1	0.4	0.4	2.4	1.1	2.0
Hungary	23.5	18.0	12.2	26.6	15.4	10.8	21.7	13.0	13.0
Malta	4.3	3.2	1.5	7.3	3.2	5.0	10.8	4.3	3.8
Netherlands	2.1	1.0	0.7	2.2	0.9	0.6	0.0	1.1	0.7
Austria	5.0	2.1	2.2	4.0	2.5	2.1	2.9	2.3	1.5
Poland	31.7	23.9	24.4	10.0	9.1	9.0	5.5	4.7	5.4
Portugal	11.5	5.7	6.7	6.7	5.1	6.4	8.3	5.4	7.1
Romania	:	:	:	36.7	24.5	28.2	33.2	16.8	16.2
Slovenia	5.4	3.1	3.4	7.5	4.0	6.1	6.0	3.2	4.3
Slovakia	23.6	17.5	14.2	10.6	6.4	5.0	6.8	4.5	4.2

Category	18–24	25–54	55 and over	18–24	25–54	55 and over	18–24	25–54	55 and over
	2005			2010			2015		
Finland	3.3	1.5	0.8	1.3	1.0	1.5	1.4	0.8	0.3
Sweden	1.1	1.0	0.4	1.3	0.9	0.2	1.0	0.3	0.2
United Kingdom	4.5	2.7	2.2	2.7	2.4	0.8	6.2	2.9	1.8

Note: (:) – no data for 2005; no data for age group 55–64 years (it was replaced by data for age group 55 years and over).

Source: own study based on: Eurostat database, Severe material deprivation rate by most frequent activity status (population aged 18 and over) (ilc_mddd12)

In 2015, in the EU-28, 4.8% of those working (aged 18 or over) lived in conditions drastically reduced by lack of financial resources to meet at least 4 out of 9 needs. The highest value in the deep deprivation index was in Bulgaria (21.8%), Romania (17.6%) and Greece (15.9%), while the lowest was in Sweden (0.4%), Finland (0.8%) and the Netherlands (1%). In Poland at that time, 4.8% of people were unable to satisfy at least 4 out of 9 basic life needs, which is equivalent to the EU-28 average. The situation varies in different age groups. By analyzing the data compiled in Table 4, it can be stated that over the last few years, Romanian citizens dealt with this problem to the highest degree (18–24 years, i.e. 33.2% – 3.5 p.p. lower than in 2010), followed by the Bulgarian citizens (in the remaining two age categories, i.e. 21.4% in the 24–54 age group – a decrease of 11.9 p.p. compared to 2010, 22.7% in the age group of 55 and more – decrease by 11.5 p.p. compared to 2010). On the other hand, this problem affected the Dutch citizens to the slightest extent (in the 18–24 age category, 0.0% – 2.2 p.p. in comparison to 2010) and the Swedish ones (in the other two age categories, i.e. 0.3% in the 24–54 age group – a decrease of 0.6 p.p. compared to 2010, 0.2% in the age group of 55 and more – the same level as in 2010).

In conclusion, based on the above analysis, it can be stated that in EU-28:
1) the number of people in the working age (that is after 18 years of age), who work and receive remuneration that does not allow them to meet their basic needs, increases;
2) the phenomenon of working poor is subject to the 'juvenile' process – an increasing number of young people (i.e. aged 18–24) entering the labor market is deprived of the opportunity to meet basic living and professional needs[8] (although this tendency is not observed in all Member States of the EU-28,

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8   This situation is currently associated with the so-called 'precariousness' trap among young people (Cymbranowicz, 2016a: 17–30). More on the situation of young people on the European labor market in publications: *Prekariat – nowe zjawisko na rynku pracy w Polsce* and *The Phenomenon of Underemployment in Poland* (Cymbranowicz, 2016a: 17–30; 2016b: 137–151).

where the problem of working and poverty was also faced by older people in the so-called middle age, i.e. aged 25–54);

3) the phenomenon of working poor is not subject to a clear 'masculinization' or 'feminization' process, although men are slightly more vulnerable than women to poverty (dichotomy between sexes is age-dependent – only in two extreme age groups, women were relatively more often than men threatened with deprivation of needs).

To sum up this part of the article, on the basis of the taxonomic analysis, a similarity can be observed between each of the EU Member States in terms of size and changes in the level of poverty among the working poor. This analysis complements earlier observations on the relation between work and the problem of poverty within this group. Based on the basic indicators used to measure the phenomenon studied, the following were conducted:

1) a selection of diagnostic variables[9],
2) a statistical verification of diagnostic variables, in order to check their level of variability and mutual correlation[10].

Values of diagnostic variables and their selected statistical characteristics for the examined period are presented in Table 5.

Table 5. Values of diagnostic variables and their selected
statistical characteristics in 2005, 2010 and 2015

EU-28	Year	2005		2010		2015	
	Cod	x1	x2	x1	x2	x1	x2
Belgium	BE	4.9	2.7	4.5	5.2	6.6	6.3
Bulgaria	BG	6.0	52.2	7.5	39.2	10.5	24.9
Czech Republic	CZ	1.7	9.6	2.6	6.7	1.8	5.4
Denmark	DK	23.5	5.7	24.5	6.1	19.3	7.6
Germany	DE	7.2	4.7	10.6	3.1	11.5	3.5
Estonia	EE	5.8	12.6	4.3	10.4	12.4	1.8
Ireland	IE	4.9	1.4	5.6	1.4	5.8	7.6
Greece	EL	12.7	13.8	11.9	13.5	19.2	28.6
Spain	ES	8.1	3.4	14.9	6.8	24.7	5.7
France	FR	7.6	6.5	12.2	5.0	10.2	3
Croatia	HR	7.6	18.8	7.6	18.8	5.8	9.7
Italy	IT	9.1	6.1	12.8	7.1	12.8	12.5

9   Diagnostic variables (destimulants): x1 – Percentage of employed persons, with disposable income below 60% of median of the equivalent income in the EU-28 (aged 18–24), x2 – Index of deepened material deprivation among EU-28 workers (aged 18–24).

10   The variability analysis was based on a classical variation factor, with a critical value of 0.1. The correlation of the analysis of the variables was based on the method of inverse matrix of the correlation factor, with a critical value of 10.

EU-28	Year	2005		2010		2015	
	Cod	x1	x2	x1	x2	x1	x2
Cyprus	CY	8.5	18	8.5	17.1	15	18.3
Latvia	LV	5.2	35.4	8	22.7	9.6	12.1
Lithuania	LT	6.5	28.2	11.8	13.4	11.9	15.7
Luxembourg	LU	15.2	0.7	9.1	0.1	13.9	2.4
Hungary	HU	10.4	23.5	6.4	26.6	14.2	21.7
Malta	MT	2.1	4.3	4.9	7.3	3.4	10.8
Netherlands	NL	3.5	2.1	6.9	2.2	7.1	0
Austria	AT	6.5	5	8	4	9.9	2.9
Poland	PL	15	31.7	12.2	10	10.3	5.5
Portugal	PT	7.8	11.5	8.2	6.7	10.6	8.3
Romania	RO	20.1	35.8	23.7	36.7	33.5	33.2
Slovenia	SI	5	5.4	3.6	7.5	7	6
Slovakia	SK	6.2	23.6	4.1	10.6	6.1	6.8
Finland	FI	9.1	3.3	8.7	1.3	7.5	1.4
Sweden	SE	19.7	1.1	20.1	1.3	16.4	1
United Kingdom	UK	11.1	4.5	5.6	2.7	12.1	6.2
Arithmetic average	x	9.0	13.3	9.6	10.5	11.8	9.6
Standard deviation	s	5.3	13.0	5.5	10.0	6.5	8.5
Coefficient of variation	V	0.591372	0.981731	0.574868	0.951677	0.97137	1.548963
Minimum value	MIN.	1.7	0.7	2.6	0.1	1.8	0.0
Maximum value	MAX.	23.5	52.2	24.5	39.2	12.1	6.2

Note: BG, HR, RO – no data for 2005; it was replaced by data for 2007 (BG, RO) and 2010 (HR).

Source: own study based on: Eurostat database, In-work at-risk-of-poverty rate by age and sex – EU-SILC survey (ilc_iw01); Severe material deprivation rate by most frequent activity status (population aged 18 and over) (ilc_mddd12); In-work at-risk-of-poverty rate by level of activity limitation, sex and age (hlth_dpe050)

Inverse matrices of matrix correlation coefficients between the aforementioned variables are shown in the Tables 6–8.

Table 6. Inverse matrix of matrix correlation coefficients between diagnostic variables, 2005

Variable	x1	x2
x1	1.002368	−0.04872
x2	−0.04872	1.002368

Source: own study based on the data compiled in Table 5.

Table 7. Inverse matrix of matrix correlation coefficients between diagnostic variables, 2010

Variable	x1	x2
x1	1.020359	−0.14413
x2	−0.14413	1.020359

Source: own study based on the data compiled in Table 5.

Table 8. Inverse matrix of matrix correlation coefficients between diagnostic variables, 2015

Variable	x1	x2
x1	1.336408	−0.67051
x2	−0.67051	1.336408

Source: own study based on the data compiled in Table 5.

The beginning of proper taxonomic analysis was preceded by the normalization of diagnostic variables based on the standardization method using arithmetic mean and standard deviation. The selected diagnostic variables are destimulants, so there was no need to transform variables to give them a uniform character. The values for the standardized variables are shown in Table 9.

Table 9. Values of standardized diagnostic variables in 2005, 2010, and 2015

EU-28	Year	2005		2010		2015	
	Cod	x1	x2	x1	x2	x1	x2
Belgium	BE	−0.7667	−0.8114	−0.9241	−0.5295	−0.7961	−0.3907
Bulgaria	BG	−0.5592	2.9878	−0.3805	2.8788	−0.1936	1.8091
Czech Republic	CZ	−1.3703	−0.2818	−1.2684	−0.3791	−1.5375	−0.4972
Denmark	DK	2.7420	−0.5811	2.6999	−0.4393	1.1657	−0.2370
Germany	DE	−0.3328	−0.6579	0.1812	−0.7400	−0.0392	−0.7219
Estonia	EE	−0.5969	−0.0515	−0.9604	−0.0082	0.0999	−0.9229
Ireland	IE	−0.7667	−0.9112	−0.7248	−0.9104	−0.9196	−0.2370
Greece	EL	0.7047	0.0406	0.4168	0.3025	1.1502	2.2467
Spain	ES	−0.1630	−0.7577	0.9604	−0.3691	1.9998	−0.4617
France	FR	−0.2574	−0.5197	0.4711	−0.5496	−0.2400	−0.7810
Croatia	HR	−0.2574	0.4243	−0.3624	0.8338	−0.9196	0.0114
Italy	IT	0.0256	−0.5504	0.5798	−0.3390	0.1616	0.3426
Cyprus	CY	−0.0876	0.3629	−0.1993	0.6634	0.5015	1.0285
Latvia	LV	−0.7101	1.6984	−0.2899	1.2248	−0.3327	0.2953
Lithuania	LT	−0.4649	1.1458	0.3986	0.2925	0.0226	0.7210
Luxembourg	LU	1.1763	−0.9649	−0.0906	−1.0408	0.3316	−0.8520
Hungary	HU	0.2708	0.7851	−0.5798	1.6157	0.3779	1.4306
Malta	MT	−1.2948	−0.6886	−0.8516	−0.3190	−1.2904	0.1415
Netherlands	NL	−1.0308	−0.8574	−0.4892	−0.8302	−0.7188	−1.1358
Austria	AT	−0.4649	−0.6348	−0.2899	−0.6498	−0.2863	−0.7928

EU-28	Year	2005		2010		2015	
	Cod	x1	x2	x1	x2	x1	x2
Poland	PL	1.1386	1.4144	0.4711	−0.0483	−0.2245	−0.4853
Portugal	PT	−0.2196	−0.1360	−0.2537	−0.3791	−0.1782	−0.1542
Romania	RO	2.1006	1.7291	2.5549	2.6282	3.3592	2.7907
Slovenia	SI	−0.7478	−0.6041	−1.0872	−0.2989	−0.7343	−0.4262
Slovakia	SK	−0.5214	0.7927	−0.9966	0.0118	−0.8733	−0.3316
Finland	FI	0.0256	−0.7653	−0.1631	−0.9205	−0.6570	−0.9702
Sweden	SE	2.0251	−0.9342	1.9026	−0.9205	0.7177	−1.0175
United Kingdom	UK	0.4029	−0.6732	−0.7248	−0.7801	0.0535	−0.4025

Source: own study based on the data compiled in Table 5.

The next stage of the analysis (for the considered period, including for each year separately) is:
1)   measurement of Euclidean distance between the EU-28 Member States,
2)   grouping the EU-28 Member States into clusters, with a similar magnitude and level of poverty among the 'working poor'.

Measurement and grouping was done using Ward's agglomeration method in XLSTAT[11]. The results of grouping of the EU-28 Member States are shown in Figures 2–4.
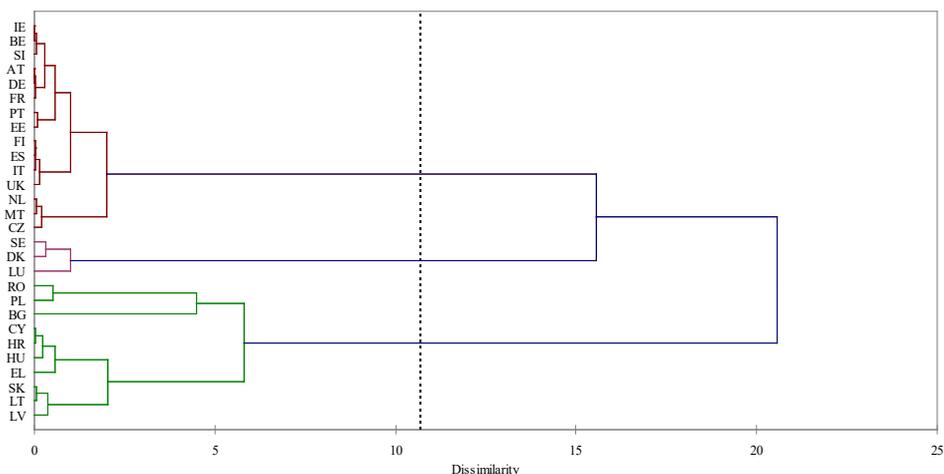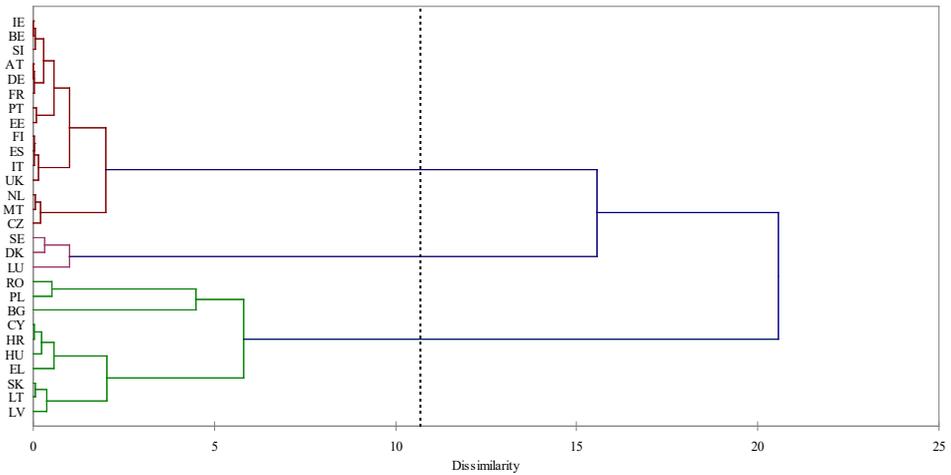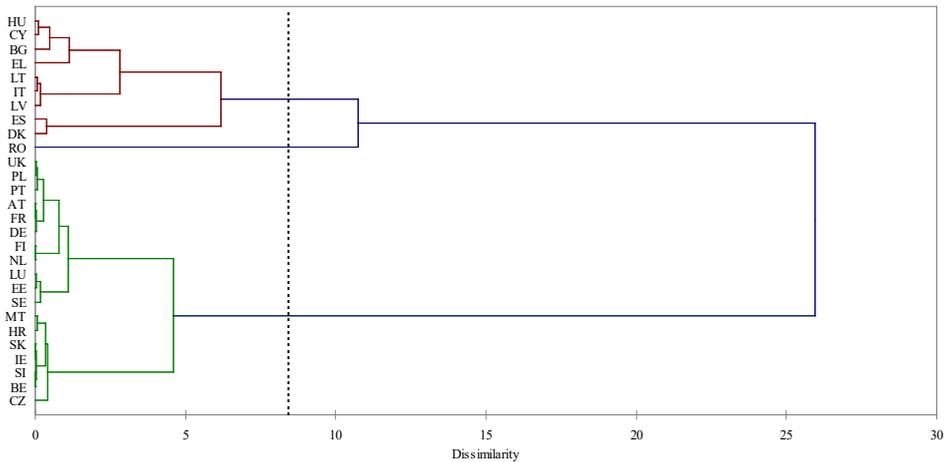

Figure 2. Cluster analysis – bonds tree diagram Ward method (Euclidean distance) for EU-28, 2005
Source: own study based on the data compiled in Table 9.

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11   A variant based on the split made automatically by XLSTAT was used.

Figure 3. Cluster analysis – bonds tree diagram Ward method (Euclidean distance) for EU-28, 2010
Source: own study based on the data compiled in Table 9.

Figure 4. Cluster analysis – bonds tree diagram Ward method (Euclidean distance) for EU-28, 2015
Source: own study based on the data compiled in Table 9.

Based on the above analysis it can be concluded that, as a result of the grouping made for the year:

1) 2005, three clusters have been identified in the EU-28: the first group included 15 countries (Ireland, Belgium, Slovenia, Austria, Germany, France, Portugal, Estonia, Finland, Spain, Italy, United Kingdom, Netherlands, Malta, Czech Republic) – and was characterized by a high level of similarity; the second group included 3 countries (Sweden, Denmark, Luxembourg) – with the highest level of similarity (the level of difference at the furthest point of di-

vision); the third group included 10 countries (the first subgroup: Romania, Poland, Bulgaria; the second subgroup: Cyprus, Croatia, Hungary, Greece, Slovakia, Lithuania, Latvia) – with the lowest level of similarity (the difference level closest to the division point); the greatest similarity is observed between groups 1 and 2, and the smallest – between groups 1 and 2 and group 3;

2) 2010, three clusters have been identified in the EU-28: the first group included 8 countries (Italy, France, Spain, Lithuania, Greece, Poland, Sweden, Denmark) – average level of similarity; the second group: 14 countries (the first subgroup: Austria, Netherlands, Portugal, United Kingdom, Ireland, Finland, Luxembourg, Germany; the second subgroup: Malta, Belgium, Slovenia, Czech Republic, Slovakia, Estonia) – with the highest level of similarity (the level of difference at the furthest point of division); the third group included 6 countries (Hungary, Latvia, Cyprus, Croatia, Bulgaria, Romania) – with the lowest level of similarity (the difference level closest to the division point); the greatest similarity is observed between groups 1 and 2, and the smallest – between groups 1 and 2 and group 3;

3) 2015, three clusters have been identified in the EU-28: the first group included 9 countries (Hungary, Cyprus, Bulgaria, Greece, Lithuania, Italy, Latvia, Spain, Denmark) – the lowest level of similarity (the difference level closest to the breakpoint); only 1 country (Romania) entered the second group; the third group included 18 countries (the first subgroup: United Kingdom, Poland, Portugal, Austria, France, Germany, Finland, Netherlands, Luxembourg, Estonia, Sweden; the second subgroup: Malta, Croatia, Slovakia, Ireland, Slovenia, Belgium, Czech Republic) – the highest level of similarity (the level of difference of the farthest point of division); the greatest similarity is observed between groups 1 and 2, while the smallest is between groups 1 and 2 and group 3.

Table 10. Cluster analysis for EU-28 in 2005, 2010 and 2015 – data compilation

Year	Cluster	Level of similarity	EU-28	Cod
2005	1	High	15	IE, BE, SI, AT, DE, FR, PT, EE, FI, ES, IT, UK, NL, MT, CZ
	2	The highest	3	SE, DK, LU
	3	The smallest	10	The first subgroup: RO, PL, BG The second subgroup: CY, HR, HU, EL, SK, LT, LV
2010	1	Average	8	IT, FR, ES, LT, EL, PL, SE, DK
	2	The highest	14	The first subgroup: AT, NL, PT, UK, IE, FI, LU, DE The second subgroup: MT, BE, SI, CZ, SK, EE
	3	The smallest	6	HU, LV, CY, HR, BG, RO

Year	Cluster	Level of similarity	EU-28	Cod
2015	1	The smallest	9	HU, CY, BG, EL, LT, IT, LV, ES, DK
	2	None	1	RO
	3	The highest	18	The first subgroup: UK, PL, PT, AT, FR, DE, FI, NL, LU, EE, SE The second subgroup: MT, HR, SK, IE, SI, BE, CZ

Source: own study based on the data compiled in Figures 3–5.

In view of the above, it can be concluded that in terms of the size and level of poverty among young working poor:
1) the situation in Hungary, Cyprus, Bulgaria, Greece, Lithuania, Italy, Latvia, Spain, Denmark, Romania is relatively the worst,
2) in relatively better situation are young people residing, learning and/or working in other countries, i.e. in United Kingdom, Poland, Portugal, Austria, France, Germany, Finland, Netherlands, Luxembourg, Estonia, Sweden, Malta, Croatia, Slovakia, Ireland, Slovenia, Belgium, Czech Republic.

5. Conclusions

Based on the analysis and assessment of the situation of young people in the working poor group in the European Union, using the method of analyzing source materials related to the researched phenomenon, as well as methods of statistical analysis and taxonomy, it can be stated that there exists the phenomenon of poverty among learners and/or working people.

Analysis of the working poor phenomenon among young people in the European Union on the basis of selected statistics cannot be optimistic. If with every year the number of people who are still poor despite working grows, it means that both the authorities of the Member States and the EU institutions responsible for employment, social affairs and social inclusion are faced with a serious challenge. In addition, looking at the problem of working poor from the perspective of people who, while they are pro-active, are simultaneously deprived of the opportunity of realizing (sometimes essential) living and professional needs, a number of other issues can be observed, such as lack of motivation to work, which promotes transition from formal to informal labor markets or leads to inactivity in general. Therefore, national and transnational decision-makers should pay closer attention to people who are struggling with poverty (although they are not disfavored in the labor market). In order to make a real contribution to addressing this problem, it is not enough to create employment policy oriented at the creation and maintenance of jobs and workplaces, but it is essential to guarantee income at a level that ensures a sense of security in the professional and personal spheres.

Such an approach seems reasonable also because of the desire to effectively implement the EU's long-term socio-economic development strategy, i.e. the Europe 2020 strategy for jobs and growth. Without taking action in this area, it will not be possible to achieve its objectives, that is to create conditions for smart, sustainable and inclusive growth.

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Analiza i ocena zjawiska *working poor* wśród ludzi młodych w Unii Europejskiej

Streszczenie: W artykule podjęto problematykę zjawiska *working poor*, czyli tzw. biednych/ubogich pracujących wśród ludzi młodych. Zjawisko to stanowi interesujący przedmiot badań, ponieważ obecnie w Unii Europejskiej coraz więcej osób jest zagrożonych biedą i/lub ubóstwem, mimo że są one włączone w podstawową instytucję społeczną, jaką jest rynek pracy. Problem ten dotyczy szczególnie ludzi młodych. Celem artykułu było przedstawienie zależności między pracą a problemem biedy i/lub ubóstwa w kontekście zjawiska *working poor*, a w jego analizie i ocenie skoncentrowano się na określeniu poziomu i struktury „biednych/ubogich pracujących" wśród ludzi młodych w Unii Europejskiej. Sytuację „biednych pracujących" można przedstawić, posiłkując się wynikami badań The European Union Statistics on Income and Living Conditions. Badanie to ma na celu zbieranie aktualnych i porównywalnych na poziomie ponadnarodowym informacji dotyczących dystrybucji dochodów i integracji społecznej w UE, w tym: dochodów i warunków życia ludności, ubóstwa i wykluczenia społecznego, edukacji, aktywności zawodowej i zdrowia oraz opieki nad dziećmi i warunków mieszkaniowych. Niestety, badanie EU-SILC, choć jest realizowane regularnie, nie zawsze stanowi kompletne źródło danych, co roku badane są bowiem inne aspekty życia społeczno-gospodarczego. Jednak dzięki informacjom pozyskanym z bazy danych Eurostat oraz z badań EU-SILC możliwe jest przeprowadzenie porównywalnych analiz statystycznych, w tym przypadku dla grupy *working poor*. Na podstawie statystycznej analizy i oceny sytuacji ludzi młodych zaliczanych do grupy *working poor* w Unii Europejskiej, dokonanej na podstawie danych Eurostatu i EU-SILC, można stwierdzić, że istnieje wśród nich zjawisko biedy i ubóstwa. Podważa to pogląd, zgodnie z którym zatrudnienie stanowi czynnik przeciwdziałający biedzie i ubóstwu, a polityka pełnego zatrudnienia jest najlepszym remedium na problem biedy i wykluczenia społecznego.

Słowa kluczowe: biedni pracujący, rynek pracy, praca, ubóstwo, Unia Europejska

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