

Economic growth and decent work as a goal of sustainable development in the European Union in the pre-pandemic and pandemic period

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ABSTRACT

Objective: The research objective of this article is to compare the European Union member countries in terms of achieving the sustainable development goal of economic growth and decent work during the Covid-19 pandemic.

Research Design & Methods: The study used a set of quantitative data, the realization of indicators proposed for Goal 8 of the document *Transforming Our World: The 2030 Agenda for Sustainable Development* signed at the summit in New York, 25-27 September 2015 by the leaders of the UN member countries for all 27 EU member states. The analysis was based on the tools of multivariate statistical analysis, a model method for linear ordering of objects proposed by Ching-Lai Hwang and Kwangsun Yoon – the technique for order of preference by similarity to ideal solution (TOPSIS).

Findings: The grouping of member countries according to the degree of implementation of the above-mentioned indicated a very good position of five countries with the highest value of the synthetic measure (Netherlands, Ireland, Luxembourg, Denmark, Sweden) and a good one for Germany, Belgium, Finland, Austria, France, Slovenia, the Czech Republic, and Malta. Bulgaria and Greece fared particularly negatively against the analysed group of countries. The hypothesis stating that under the conditions of the Covid-19 pandemic most of the indicators for achieving Sustainable Development Goal 8 worsened in most European Union member states was verified positively. In the era of the Covid-19 pandemic, varying percentage changes were observed in individual indicators of achieving the above-mentioned goal in the studied group of countries.

Implications & Recommendations: The results obtained under the individual indicators of Sustainable Development Goal 8 indicate the need for differentiated economic policy measures in individual countries for improving the situation in selected areas of the economy. These require a pragmatic and holistic approach that takes into account, on the one hand, local development conditions and the possibility of economic improvement, and, on the other hand, the need to ensure the health and well-being of the population under the risk of a recurrence of the Covid-19 pandemic.

Contribution & Value Added: The value added of the work is the classification of the European Union member countries according to their progress in achieving the Sustainable Development Goal of economic growth and decent work (SDG 8) and the analysis of changes in indicators monitoring changes in these areas under conditions of the Covid-19 pandemic.

Article type: research article

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INTRODUCTION

The outbreak of the Covid-19 pandemic has significantly affected all areas of economic life and caused many changes in the functioning of societies around the world. The threat of Covid-19 spreading internationally was announced by the World Health Organization (WHO) in January 2020, and the onset of the pandemic in March 2020 (WHO, 2020). The spread of the Covid-19 pandemic placed an undue burden on public health systems (Yuk-Chiu Yip, 2021) and caused the most serious public health crisis since the 1918 influenza pandemic in Spain (Silva & Pena, 2021). The experience of the Covid-19 pandemic is likely to change the rules of health systems indefinitely (Nicola *et al.*, 2020a). Forced to respond quickly to rapidly increasing infection rates and public health risks, governments around the world have taken measures including closing borders, restricting travel, establishing quarantines, mandating the wearing of masks, or differentiating regions and countries in terms of epidemiological risk (Blavatnik School of Government & University of Oxford, 2020; Oliu-Barton & Pradelski, 2021; Pan *et al.*, 2020; Sjödin *et al.*, 2020). It was recommended that employees be directed to work from home, and when this was not possible, employers were required to create conditions that allowed for social distancing (Callaway *et al.*, 2021). To date, remote work has not been particularly widespread (Kossek & Lautsch, 2018) and as a result of the outbreak of the Covid-19 pandemic, it has become normal practice (Lee & Lee, 2021; Wang *et al.*, 2021), except in industries where this is not possible (Phillips, 2020). Moreover, many schools and universities have moved to remote learning (Leigh *et al.*, 2021; Morgan, 2020; Rahiem, 2020). These activities have undergone numerous modifications to accommodate the subsequent phases of the pandemic (Dai & Wang, 2020).

The Covid-19 pandemic had a devastating impact not only on the health of the population but also led to huge perturbations in the functioning of the European and global economies. It caused supply and demand shocks in many countries. Health and economic problems have reduced household incomes, increased unemployment (Brzezinski, 2021) and caused a decline in the gross domestic product (GDP; Beckman *et al.*, 2021). All European Union member states have experienced a decline in economic growth (Baneliene, 2022). Production, consumption and trade patterns were affected directly as a result of freezing the economy and introducing social distancing measures (Espitia *et al.*, 2021). The pandemic turmoil caused severe turbulence in many parts of the economy covering: primary sectors, which include industries involved in the extraction of raw materials, secondary sectors involved in the production of finished products, and tertiary sectors, affecting all service delivery industries (Nicola *et al.*, 2020b). Industries that alternated between freezing and thawing were particularly affected, such as food service (Madeira *et al.*, 2020), tourism (Zenker & Kock, 2020), hospitality (Gursoy & Chi, 2020) and long-haul transportation (Rothengatter *et al.*, 2021). During the Covid-19 pandemic, the financial performance of economic agents around the world deteriorated significantly, but this was less pronounced in countries with better health systems and more mature financial systems and institutions. To stabilise macroeconomic indicators, some countries carried out monetary expansion (Ceylan *et al.*, 2020), while the European Central Bank (2020) and the European Union (The Council of the EU, 2020; European Commission, 2020) proposed aid programs aimed at pulling the European economy out of the crisis.

The Covid-19 pandemic took all European Union member states by surprise, wreaking havoc on their economies. The global nature of the pandemic's impact was naturally noticeable in the issues related to the implementation of the Sustainable Development Goals with a special focus on Goal 8 on measures for economic growth and decent work. The research objective of this article is to compare the European Union member countries in terms of the realization of the Sustainable Development Goal on economic growth and decent work during the Covid-19 pandemic. We adopted the research hypothesis stating that under the conditions of the Covid-19 pandemic, most of the indicators of the realization of the Sustainable Development Goal on economic growth and decent work deteriorated in most European Union member countries.

The structure of the article includes several integral parts. In the next part, a query of the literature on the subject was carried out and the research hypothesis was developed. The next part covers research methodology, including research methods and selected variables. The results and discussion

are presented in the next section. The last part contains conclusions from the research, including recommendations for economic policy.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Promoting Economic Growth and Decent Work as a Sustainable Development Goal

In September 2015, the United Nations General Assembly approved the Sustainable Development Goals (SDGs). The entity responsible for setting the goals and targets was the Open Working Group on the Sustainable Development Goals. The group included 30 representatives from five UN regions, who were also supported by the business community (Firlej, 2021). The adopted goals represent a blueprint for a global partnership for peace, development and human rights and cover the period 2016-2030. The 2030 Agenda is a follow-up to the Millennium Development Goals (MDGs) adopted in 2001, which constituted the international development agenda for 2001-2015 (Frey & MacNaughton, 2016). The Sustainable Development Goals (SDGs) are a set of 17 main goals consisting of several specific objectives and indicators to help measure whether a goal has been met (Measuring progress towards the Sustainable Development Goals – SDG Tracker, 2022; Pradhan, 2021). The European Union actively participates in the implementation of Agenda 2030, and the projects it implements correspond to the UN guidelines (Pleśniarska, 2019). A search of the literature on the subject indicates the growing interest of researchers in the topic of determinants of implementation of the Sustainable Development Goals, which can include studies on integration (Stafford-Smith *et al.*, 2017); predicaments and strategies (Bali Swain & Yang-Wallentin, 2020); collaborative governance, among others. The multifaceted and diverse research approaches used by various authors indicate the complexity of the issue of determinants of the effective implementation of Sustainable Development Goals. Another group is research on the interactions between SDGs, which by their scope, generate synergies and trade-offs (Anderson *et al.*, 2021; Warchold *et al.*, 2021) and are often studied within selected areas, such as marine-related goals (Singh *et al.*, 2018); climate action goals (Fuso Nerini *et al.*, 2019); social goals (Scherer *et al.*, 2018).

The subject of interest in this research is Sustainable Development Goal 8 (SDG8), the scope of which includes 'promoting sustained, inclusive and sustainable economic growth and full and productive employment and decent work for all' (United Nations General Assembly, 2015). This goal focuses mainly on sustainable growth and full and productive employment with an emphasis on ensuring decent work for all people. Achieving sustainable economic growth requires providing conditions conducive for people to engage in quality work that stimulates the economy while respecting the well-being of the environment. It postulates the need to create new work opportunities and ensure decent working conditions for the entire working-age population. It is important to increase access to financial services, which will significantly affect the proper management of the capital held (Goal 8, 2022). Achieving the Sustainable Development Goals, in particular SDG 8, is a challenge in EU member states.

The analysis of indicators related to SDG 8 makes it possible to assess the chances of achieving it within the set timeframe and provides guidance for possible measures to improve the results obtained. In the literature, one can find empirical studies conducted based on all or selected indicators of the aforementioned goal, which were carried out for selected areas and periods using various econometric tools. Among the studies on European Union member countries (and others), one can mention an analysis of labour market inequality in the EU (Jianu *et al.*, 2021); a partial order analysis of Eurostat SDG 8 data in the EU (Carlsen, 2021); an assessment of SDG 8 implementation in G20 countries (Lapinskaitė & Vidžiūnaitė, 2020); nowcasting and monitoring SDG 8 in Austria (Bilek-Steindl & Url, 2022).

RESEARCH METHODOLOGY

The scope of the study covered the years 2016, 2018, 2020. A synthetic measure proposed by Hwang (Hwang & Yoon, 1981) was used to assess progress toward SDG 8 in one year. The Technique for Order Preference using Similarity to Ideal Solution found great recognition in many fields including economics or management. This method is equivalent to Hellwig's taxonomic method of ordering

objects, which considers both the best and worst alternatives of the possibility of measuring the adopted diagnostic variables.

The study adopted a three-stage algorithm of procedure. Firstly, the characteristics describing the phenomenon under study were selected using SDG 8 (Eurostat, 2020) specific indicators (Table 1), and then their nature was identified. Such characteristics as real GDP per capita, investment share of GDP, employment rate, resource productivity, and domestic material consumption were taken as stimulants, *i.e.*, characteristics whose higher values qualify the object under study as better for the task at hand.

Table 1. Selected variables for the analysis

Variable / Measure [character]			
X_1	Real GDP per capita (Thousand EUR) [S]	X_6	People killed in accidents at work (number per 100.000 employees) [D]
X_2	Investment share of GDP (%) [S]	X_7	In work at-risk-of-poverty rate (%) [D]
X_3	Young people neither in employment nor in education and training (NEET) (%) [D]	X_8	Inactive population due to caring responsibilities (%) [D]
X_4	Employment rate (%) [S]	X_9	Resource productivity and domestic material consumption (DMC) (EUR/kg) [S]
X_5	Long-term unemployment rate (%) [D]		

Source: own elaboration.

The study assumed that each variable contributed the same portion of information to the evaluation of the objects under study, the weights of all variables were the same and equal to one. In addition, basic numerical characteristics and linear correlation coefficients were determined for the diagnostic variables (Tables 2 and 3).

Almost all variables (exception variable X_4) in the studied group of objects are not quasi-constant variables, as evidenced by the determined coefficients of variation. The average value of real GDP per capita (X_1) in 2018 compared to 2016 increased by 5%, and in 2020 it was 2% lower than in 2018. A positive trend was noted for the investment share of GDP (X_2), resource productivity, and domestic material consumption (X_9). In contrast, the average number of young people neither in education nor in education and training (X_3), after declining by 12% in 2016-2018, increased by 6% in 2018-2020. The average employment rate (X_4) declined slightly in 2018-2020, when it increased by 4% in 2016-2018. The inactive population due to caring responsibilities (X_8) followed the same trend. Such variables as long-term unemployment rate (X_5), people killed in accidents at work (X_6), and in-work at-risk-of-poverty rate (X_7) showed a decreasing trend in the years under study, with a lower trend in recent years.

Table 2. Selected variables for the analysis and descriptive statistics in the years 2016 (a), 2018 (b) and 2020 (c)

Variable	Min			Max			Median			Mean			CV*		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
X_1	5.91	6.33	6.38	84.75	84.04	82.25	20.13	22.26	20.33	25.83	27.23	26.57	0.66	0.63	0.65
X_2	11.01	11.15	11.66	35.81	28.24	39.68	20.00	21.05	21.85	20.72	21.13	22.31	0.21	0.16	0.23
X_3	6.30	5.70	5.70	24.30	23.40	23.30	13.30	11.60	12.00	13.73	12.03	12.74	0.36	0.35	0.31
X_4	55.90	59.00	58.30	80.60	81.80	80.80	71.10	74.70	74.80	70.52	73.45	73.41	0.08	0.08	0.08
X_5	1.20	0.70	0.60	15.40	12.50	10.50	3.10	2.10	1.80	4.25	2.85	2.29	0.70	0.83	0.85
X_6	0.50	0.60	0.48	6.32	4.33	3.53	2.13	1.96	2.01	2.45	2.13	1.97	0.54	0.45	0.44
X_7	3.10	3.10	3.10	18.90	15.30	14.90	8.30	8.00	7.80	8.53	8.03	7.86	0.41	0.36	0.34
X_8	5.10	4.30	4.50	46.40	52.30	54.20	24.90	24.70	22.90	23.18	25.22	24.36	0.51	0.49	0.55
X_9	0.35	0.35	0.34	4.17	4.60	5.23	1.43	1.38	1.58	1.79	1.82	1.87	0.59	0.61	0.64

Note: * CV-Coefficient of Variation; The analyses indicated that the indicators in 2020 were generally not significantly correlated. A very strong positive correlation occurred between real GDP per capita (X_1) and resource productivity and domestic material consumption (X_9). In contrast, strongly negatively correlated with employment rate (X_4) were: young people neither in employment nor in education and training (X_3) and long-term unemployment rate (X_5).

Source: own elaboration.

Table 3. Correlation between variables in the year 2020

Variable	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈
X ₂	0.236							
X ₃	-0.455*	-0.194						
X ₄	0.141	0.386*	-0.752***					
X ₅	-0.212	-0.514**	0.621**	-0.759***				
X ₆	-0.169	0.068	0.334	-0.169	-0.072			
X ₇	-0.100	-0.286	0.389*	-0.449*	0.313	0.333		
X ₈	-0.406*	-0.090	0.194	-0.003	0.009	0.101	-0.041	
X ₉	0.741***	-0.009	-0.266	-0.034	-0.006	-0.273	-0.064	-0.410*

Note: Levels of significance: * p < 0.05. ** p < 0.01. *** p < 0.001.

Source: own elaboration.

In the second stage, the variables were normalised (Hwang & Yoon, 1981):

$$z_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^n x_{ij}^2}} \quad (1)$$

where:

x_{ij}, z_{ij} - Actual and normalised values of feature j for object i ($i = 1, \dots, n, j = 1, 2, \dots, m$).

Then the coordinates of the pattern ($[z_j^+]_{j=1, \dots, m}$) and anti-pattern ($[z_j^-]_{j=1, \dots, m}$) of the development were determined:

$$z_j^+ := \begin{cases} \max_i \{z_{ij}\}, X_j \in S \\ \min_i \{z_{ij}\}, X_j \in D \end{cases} \quad i \quad z_j^- := \begin{cases} \min_i \{z_{ij}\}, X_j \in S \\ \max_i \{z_{ij}\}, X_j \in D \end{cases} \quad (2)$$

where:

S, D - the set of stimulants and the set of destimulants, respectively.

In the next stage, the values of the synthetic variable were determined:

$$Q_i = \frac{d_i^-}{d_i^- + d_i^+} \quad (3)$$

where:

$$d_i^- = \sqrt{\sum_{j=1}^m (z_{ij} - z_j^-)^2}, \quad d_i^+ = \sqrt{\sum_{j=1}^m (z_{ij} - z_j^+)^2}.$$

The largest value Q_i indicates the best object.

The values of the synthetic measure made it possible to organise the countries and make a typology of the studied objects into groups*:

$$\begin{aligned} & - \text{Group 1: } Q_i \in (\bar{Q} + S_Q, \max_i Q_i] \\ & - \text{Group 2: } Q_i \in (\bar{Q}, \bar{Q} + S_Q] \\ & - \text{Group 3: } Q_i \in (\bar{Q} - S_Q, \bar{Q}] \\ & - \text{Group 4: } Q_i \in [\min_i Q_i, \bar{Q} - S_Q] \end{aligned} \quad (4)$$

where:

\bar{Q}, S_Q - arithmetic mean, the standard deviation of the synthetic variable Q ;

Group 1 - countries with the highest value of the synthetic measure;

Group 2 - countries with a high value of the synthetic measure;

Group 3 - countries with a low value of the synthetic measure;

Group 4 - countries with the lowest value of the synthetic measure.

The sustainable development goals presented in table 1 concern such areas as health, food, education, and gender equality.

RESULTS AND DISCUSSION

According to the described model method of object ordering, the EU countries were classified in terms of the measure of assessment of labour market inequality in each country studied (Figure 1). In addition, four groups of EU countries were distinguished in terms of the labour market situation in 2020 (Figure 1, Figure 2). Analysis of the dynamics of indicators in groups of similar countries gave a broader and more accurate picture of the factors affecting the EU labour market over the 2016-2020 period, including changes caused by the Covid-19 pandemic (Figure 3).

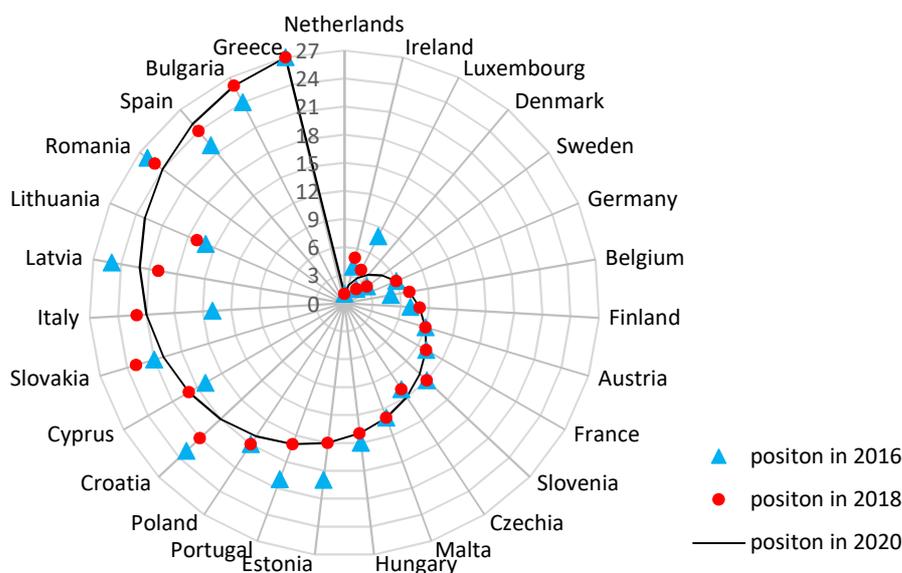


Figure 1. Ranking of European Union countries in terms of the level of achievement of SDG 8 in 2020

Source: own elaboration based on the results.

In the years under study, the highest-ranked country was the Netherlands, with Greece in last place (Figure 1). In 2018, nine countries (Belgium, Bulgaria, Cyprus, Finland, Ireland, Italy, Lithuania, Slovakia, and Spain) were ranked lower than in 2016. In comparison, countries such as the Czech Republic, Denmark, Latvia, Lithuania, Spain, and Sweden were ranked lower in 2020 compared to 2018. Compared to 2016, seven countries improved their ranking in 2018 (Croatia, Estonia, Hungary, Latvia, Luxembourg, Portugal, and Romania). Eight countries ranked higher in 2020 compared to 2018 (Croatia, Ireland, Italy, Luxembourg, Poland, Romania, Slovakia, and Slovenia). Countries that did not change their position between 2018 and 2020 turned out to be: Austria, Belgium, Bulgaria, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Malta, Netherlands, and Portugal.

Within the ordered set of countries, a topological classification of similar objects was carried out using the basic characteristics of the distribution of the synthetic measure determined according to formula (3) in 2020. The first group consisted of five EU countries, whose distinguishing characteristics were high values of real GDP per capita and the employment rate, as well as the highest average share of investment in GDP and resource productivity and domestic material consumption (Figure 2). For these countries, low values were recorded for the indicators: young people not in employment, education or training (NEET), long-term unemployment rate, people killed in accidents at work, and population that is inactive (not working) due to care responsibilities. The average rate of working people at risk of poverty in the countries in this group is 7.5%, lower than the EU average. In the comparison of 2020 to 2018, the average value of the index of real GDP per capita (X_1) for group (1) countries was EUR 55 284, this is twice the EU average (EUR 26 390). The factors that reached higher values than the EU average in group (1) turned out to be the indicators: investment share of GDP (X_2), the employment rate (X_4) and resource productivity and domestic material

consumption (DMC) (X_9). The fact that all indicators considered destimulants achieved lower average wattages than the EU average was noteworthy within group (1).

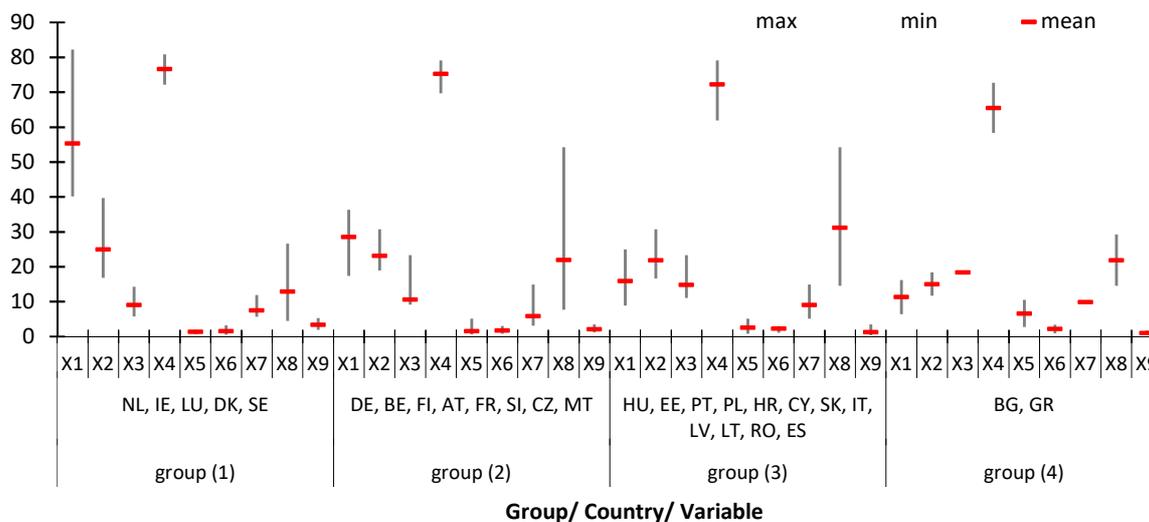


Figure 2. Numerical characteristics of features in groups of similar countries in terms of the level of achievement of SDG 8 in 2020

Note: Designations as in Table 1. AT: Austria, BE: Belgium, BG: Bulgaria, CY: Cyprus, CZ: Czechia, DE: Germany, DK: Denmark, EE: Estonia, ES: Spain, FI: Finland, FR: France, GR: Greece, HR: Croatia, HU: Hungary, IE: Ireland, IT: Italy, LT: Lithuania, LU: Luxembourg, LV: Latvia, MT: Malta, NL: Netherlands, PL: Poland, PT: Portugal, RO: Romania, SE: Sweden, SI: Slovenia, SK: Slovakia.
Source: own elaboration.

The second group consisted of eight countries. The highest value for this group was achieved by indicator X_4 – employment level. Its average value in this group was 75.3%. This is 3.6 percentage points higher than the EU average (71.7%). In the indicated group, the indicators that achieved higher average values than the EU average turned out to be the following: real GDP per capita (X_1), investment share of GDP (X_2), the employment rate (X_4), people killed in accidents at work (number per 100 000 employees) (X_6), and inactive population due to care giving responsibilities (%) (X_8). In group (2), only one indicator considered a destimulant (X_6 – people killed in accidents at work (number per 100 000 employees) achieved a higher average score (1.75%) than the EU average (1.71%). Indicator X_9 (resource productivity and domestic material consumption (DMC)) was almost the same (EUR 2.062/kg) as the EU average (EUR 2.080/kg).

The third group included the largest number of countries – twelve. The highest value in the fourth group was again the X_4 index. For the countries in the fourth group, the average value of the X_4 indicator was 72.2%, which was 0.5 percentage points higher than the EU average. The average value of indicator X_1 (Real GDP per capita), which turned out to be lower by as much as EUR 10 510 compared to the EU average (EUR 26 390) was noteworthy for group (3). The indicators in group (3) that achieved higher average values than the EU average were: young people not in employment, education or training (NEET) (X_3), the employment rate (X_4), long-term unemployment rate (X_5), people killed in accidents at work (number per 100 000 employees) (X_6), in-work at-risk-of-poverty rate (X_7) and inactive population due to care giving responsibilities (X_8). Indicator X_5 reached a similar value (2.51%) to the EU average (2.5%). The X_8 indicator, on the other hand, reached almost twice the average value (31.2%) of the EU average (17.2).

The final, fourth group, consisted of only two countries – Bulgaria and Greece. Similarly to the third group, the average value of the X_1 indicator (EUR 11,290) was lower in group (4) than the EU average (EUR 26,390). The highest value was achieved by indicator X_4 , whose average value for the groups was 65.5% which was 6.2 percentage points lower than the EU average. The indicators in group (4) that achieved higher average values than the EU average were: young people not in employment, education or training (NEET) (X_3), long-term unemployment rate (X_5), people killed in

accidents at work (number per 100 000 employees) (X_6), in-work at-risk-of-poverty rate (X_7) and inactive population due to care giving responsibilities (X_8). Within group (4), the average value of indicator X_5 (long-term unemployment rate) reached almost 2.5 times the (average) result (6.6%) than the EU average (2.5%), and indicator X_8 , whose average value of 21.85% was 4.65 percentage points higher than the EU average. In addition, within group (4), all indicators considered destimulants achieved a higher average score than the EU average.

In 2020, the leader of the group with a high degree of SDG8 implementation was the Netherlands, which maintained its leading position among EU countries relative to 2016 and 2018. The effectiveness of the Netherlands in terms of SDG8 implementation, like the other countries classified in Group 1 (Ireland, Luxembourg, Denmark, Sweden), was confirmed in the work of another team of researchers in calculations for 2019 (Jianu *et al.*, 2021). However, differences in the ranking of countries are apparent (*e.g.*, Ireland in the first place and the Netherlands in sixth place). In the same research, France, Germany, Belgium, Finland, and Austria were ranked high in the second group (as in the conducted research). In the compared studies, the size of groups 3 and 4 and the countries assigned to them varies widely. Nevertheless, both studies unanimously confirmed Bulgaria's weakness in SDG8 implementation. The aforementioned differences may be due to the different optics of the econometric studies, as well as the time horizon considered in the aforementioned study.

Lapinskaitė and Vidžiūnaitė (2020) also proved the high activity of Germany and France in the aforementioned area (ninth and tenth place, respectively) among the G20 countries in 2013-2018. In the same study, a noticeably weaker result was obtained by Italy (15th place), which is similar to the present research, where it was assigned to the group of moderate SDG8 implementation, ranking 21st among the European Union countries. Another work (Carlsen, 2021) includes a study involving simultaneous analysis of the five main (in the author's opinion) SDG8 indicators (real GDP per capita, investment share of GDP, young people neither in employment nor in education and training, employment rate, long-term unemployment rate) in European Union member countries in 2010, 2015, and 2019. Limiting this study to selected indicators drastically reduces or even prevents the possibility of comparison with the results obtained in this research, although minor similarities can be observed. In 2019, as many as 10 countries were the same as those classified collectively in the groups with very high (1) or high (2) SDG8 implementation. In both surveys, Bulgaria's score was unanimously the weakest. Drawing conclusions based on this comparison seems unauthorized, although it is relevant for undertaking possible further research in the area of the role of individual indicators in SDG8 implementation.

No empirical studies covering the implementation of SDG8 during the Covid-19 pandemic in the European Union have been presented in the available literature to date, making it impossible to directly compare the results obtained in completed studies at this time with other works on the same topic.

The economic recession caused by the Covid-19 pandemic was reflected in the deterioration of indicators monitoring the implementation of Sustainable Development Goal 8 in many European economies. The reduction in the activity of both the demand and supply side of the market significantly determined the formation of the socio-economic crisis. Consumers worried about their health and loss of employment reduced demand for consumer goods and services. On the other hand, manufacturers and retailers were forced to reduce the scope of their business activities due to government restrictions. As illustrated by the decline in GDP per capita, the economic downturn was a determinant of the decline in investor activity in the market (measured as the share of investment in GDP). Operating in an environment of uncertainty, the deterioration of many macroeconomic indicators or the rupture or restriction in the area of international supply chains constituted a barrier to making investments. In many European countries, the Covid-19 pandemic had a devastating effect on the labour market, reflected in a decline in employment and an increase in unemployment. Young people, whose labour market situation has deteriorated due to the numerous openings and closings of industries (*e.g.*, catering, hospitality, tourism), which are often popular destinations for their employment, have been particularly affected.

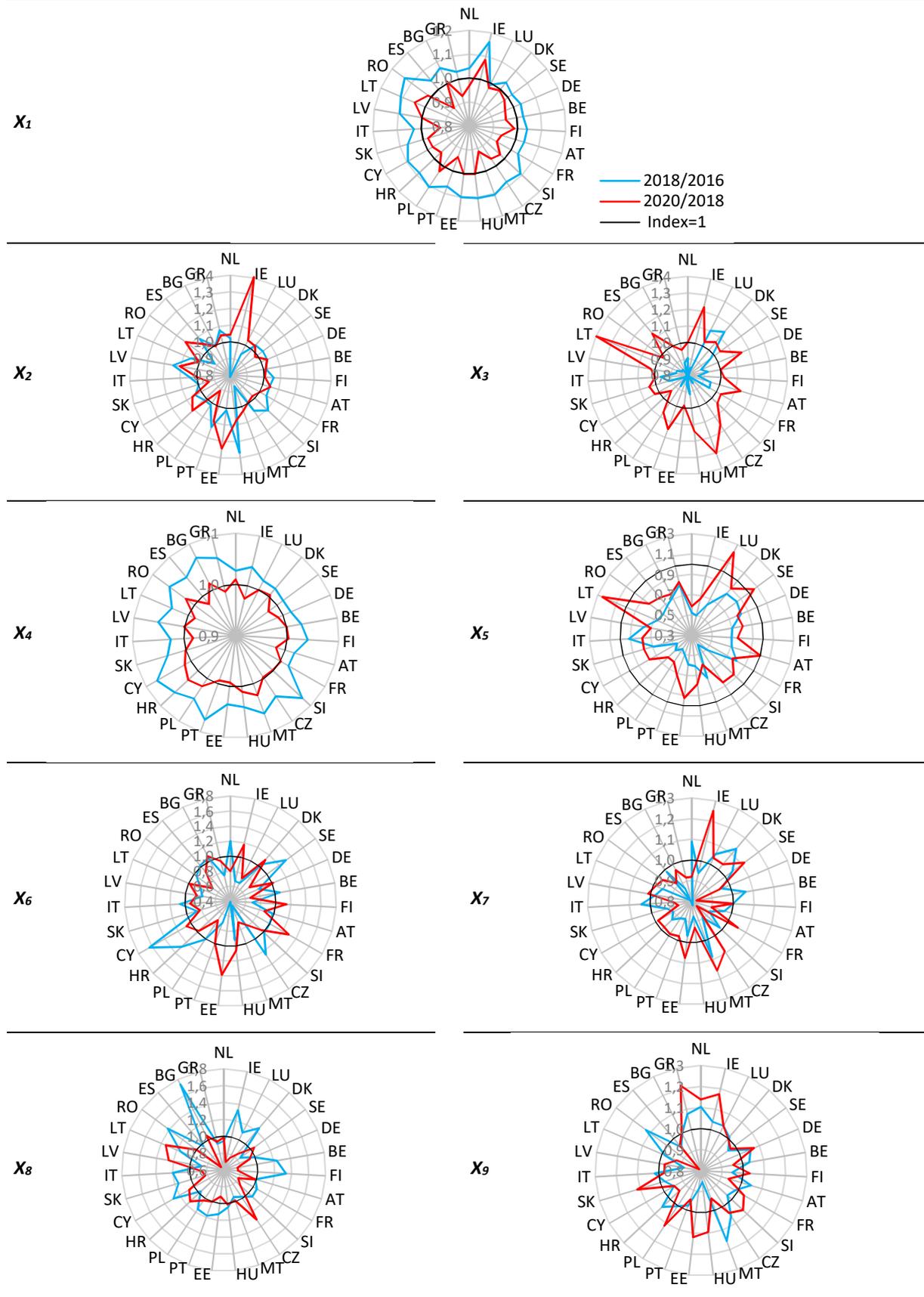


Figure 3. Trait indices for EU countries

Note: abbreviations as in Figure 2.

Source: own elaboration in Statistica.

In almost all EU countries, real GDP per capita (X_1) increased by at least 3% in 2018 compared to 2016. Only in Luxembourg did real GDP per capita decline (1%) during the period. Between 2018 and 2020, increases in the X_1 index were recorded only in Ireland (by 8%), Lithuania (by 5%), Poland (by 3%), Romania (by 1%), and Bulgaria (by 1%). In three countries, namely Hungary, Estonia, and Latvia, it remained at the same level. In the remaining countries, GDP per capita declined and there were changes ranging from 1% (Denmark, Finland) to 10% (Spain). In the EU, real GDP per capita fell by 4% between 2020 and 2018. Therefore, it can be concluded that in the economic area, the pandemic will result in significant changes and may even represent a turning point in the economic history of the 21st century (Laskowski, 2020). According to forecasts, GDP growth rates will vary from country to country, but the EU is expected to return to a path of economic convergence. At the beginning of 2023, real GDP should approach the sustainable growth trend that the EU economy was expected to follow even before the pandemic (Gorynia & Polowczyk, 2022).

The share of investment in GDP (X_2) declined between 2016 and 2018 only in countries such as Ireland, Luxembourg, Malta, and Romania. The largest increase in X_2 during these years was recorded in Hungary (27%). Within the X_2 indicator, growth of more than 10% was recorded in Ireland (41%), Estonia (24%), Romania (13%), Latvia (11%), and Hungary (11%). In the period under review (2018-2020), the largest percentage decrease of this magnitude occurred in Poland and Slovakia, it was a decrease of 9% and 7%, respectively. In addition, decreases of up to 2% were recorded only in: Sweden, Slovenia, the Czech Republic, and Bulgaria. In the remaining countries, the share of investment in GDP remained unchanged or increased slightly. However, forecasts by international institutions indicate that the GDP of eurozone economies will not reach pre-pandemic levels (Laskowski, 2020).

In the first analyzed period (2016-2020) young people not in employment, education, or training (X_3) recorded an increase in only two countries – Denmark (14%) and Luxembourg (10%). The highest increase in the X_3 indicator between 2018 and 2020 was recorded in Lithuania (40%). More than a 20% increase in the X_3 indicator was also recorded in Ireland (22%) and Malta (30%). The largest decrease in the X_3 rate between 2018 and 2020 was recorded in Croatia (6%). In countries such as Belgium, Bulgaria, the Netherlands, and Italy, the X_3 index remained at the same level. Over the past decade, the number of young people not in employment, education or training (NEET) has reached very high levels in many European countries (Assmann & Broschinski, 2021).

Between 2016 and 2018, the X_4 indicator (the employment rate) increased by 7-8% in the following countries: Slovenia (8%), Cyprus (8%), Portugal (7%), and Bulgaria (7%). The change from 2018 to 2020 in all countries was a maximum of 3%. The highest positive change was in Croatia, where the X_4 indicator increased by 3%. A 2% change occurred in Malta, Poland, and Romania. The highest (3%) decline occurred in Ireland. Declines of 2% were recorded in Austria, Spain, Sweden, and Italy. Belgium, Finland, France, Slovenia, the Czech Republic, Slovakia, Latvia, Denmark, and Luxembourg saw no significant change in X_4 . Unfortunately, Covid-19 continues to have devastating effects worldwide, causing high levels of unemployment and disconnection from work and school (Rosenberg *et al.*, 2022). To survive in the market during the economic crisis, companies often choose to reduce their workforce despite the awareness of the loss resulting from the attrition of a suitably skilled workforce (Piątkowski, 2010).

In 2018, compared to 2016, the long-term unemployment rate (X_5) achieved the largest decline in three countries: the Czech Republic (59%), Poland (54%), and Cyprus (53%). The largest decrease (42%) between 2018 and 2020 was recorded in the Netherlands. In addition, high decreases were recorded in countries such as Ireland (33%), Malta (39%), Poland (38%), and Croatia (38%). The highest increases in the X_5 index during the period under review were recorded in Lithuania (25%) and Luxembourg (21%). A slight increase (6%) was also recorded in Sweden. The only country with no change was Austria. The labour market situation in the European Union improved markedly in Q2 2021, as evidenced by the creation of some 1.5 million jobs. However, employment in the EU still has not reached pre-pandemic levels. In addition, areas of labour market shortages are emerging, especially in sectors where activity is growing the most (*e.g.*, IT, motor transport, courier deliveries) (Gorynia & Polowczyk, 2022).

Persons killed in occupational accidents (X_6) in 2018 compared to 2016 increased (most) in the following countries: Cyprus (64%), Sweden (31%) and Croatia (28%). The highest increase (39%) in the X_6 indicator in the years 2018 and 2020 was recorded in Estonia. Countries with a significant increase

in the X_6 rate also turned out to be France (29%), Ireland (17%) and Denmark (12%). The largest decrease in the X_6 index was recorded in Belgium (34%), Romania (31%) and Malta (30%). The only country with no change for the X_6 indicator was Portugal.

In 2018, compared to 2016, the in-work at-risk-of-poverty rate (X_7) increased the most in Denmark (13%), the Netherlands (9%), and Malta (8%). Between 2018 and 2020, the largest increase (25%) in the X_7 index was recorded in Ireland. An increase of more than 10% in this indicator was also seen in Sweden (11%) and Malta (16%). The highest decrease in the X_7 index was seen in Belgium, at 18%. Declines above 10% were recorded in countries such as Slovenia (17%), Slovakia (13%), Italy (11%), and Austria (10%). Finland turned out to be the country with no change in the X_7 rate. The results show that although the pandemic has negatively affected unemployment and inefficiency rates, there is a strong recovery in the labour market (Sazmaz *et al.*, 2021).

Inactive population due to caregiving responsibilities (X_8) in 2018 compared to 2016 saw the largest decreases in the following countries: Sweden (16%), Latvia (14%), the Netherlands, and Malta (6%). Between 2018 and 2020, the largest increases in the X_8 indicator were recorded in Lithuania (34%), the Czech Republic (30%), and Latvia (26%). The largest declines within this indicator were recorded by countries such as Spain (35%), Ireland (30%), and Luxembourg (24%). Portugal and Romania saw no change within the X_8 indicator. Having an informal caregiver and inactive status can be associated with unhealthy behaviours and common mental disorders (Tseliou *et al.*, 2019).

In 2018, compared to 2016, resource productivity and domestic material consumption (X_9) reached the highest values in Malta (16%), Romania (12%), and the Netherlands (10%). The largest increases between 2018 and 2020, in the X_9 indicator (resource productivity and domestic material consumption) were recorded in countries such as Germany (22%), Ireland (17%) and the Netherlands (14%). The largest decrease (19%) was recorded in Romania. Two countries (Denmark and Bulgaria) showed no change for the X_9 indicator. Understanding how intangible ecosystem benefits (cultural services) are shaped is critical to achieving Sustainable Development Goals (in particular SDG 8.9) (Vaz *et al.*, 2019).

CONCLUSIONS

Economic growth and decent work as the focus of one of the Sustainable Development Goals have been hit particularly hard by the outbreak of the Covid-19 pandemic. The research in this article fills the research gap in terms of comparing EU countries in terms of achieving Sustainable Development Goal 8 in the era of the Covid-19 pandemic and before its emergence. The above analysis makes it possible to present the following research conclusions:

1. Grouping of member countries according to the degree of implementation of the aforementioned goal indicated a very good position for five countries (the Netherlands, Ireland, Luxembourg, Denmark, Sweden) and a good one for Germany, Belgium, Finland, Austria, France, Slovenia, the Czech Republic, and Malta. The number of countries ranked together in the aforementioned groups was less than the other two with moderate or poor progress. Bulgaria and Greece fared particularly negatively against the analysed group of countries.
2. The hypothesis stating that under the conditions of the Covid-19 pandemic most of the indicators for achieving Sustainable Development Goal 8 deteriorated in most of the European Union member states was verified positively. In the era of the Covid-19 pandemic, differentiated percentage changes were observed in individual indicators of realization of the above-mentioned goal in the studied group of countries. This indicates the varying impact of the Covid-19 pandemic on the EU economies, which could be due to at least the percentage of the infected population and the extent of the restrictions implemented in connection with it.
3. The results obtained under the various indicators of Sustainable Development Goal 8 indicate the need for differentiated economic policy actions in individual countries to improve the situation in selected areas of the economy. They require a pragmatic and holistic approach that takes into account, on the one hand, local development conditions and the possibility of economic improvement, and on the other hand, the need to ensure the health and well-being of the population under the risk of a recurrence of the Covid-19 pandemic.

4. This study has some limitations. Due to limited data availability, the study considers only one year (2020) of the entire period of the EU economy's struggle with the impact of the Covid-19 pandemic. This implies the need for future studies supplemented by 2021-2022.

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The contribution share of authors is equal and amounts to 33.(3)% for each of them. KAF – conceptualization, literature writing, discussion, conclusion. CF – conceptualization, literature writing, discussion, conclusion. LL – methodology, calculations.

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Conflict of Interest

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