Indicators of Socio-Economic Development of European Union Member States

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Abstract:

Purpose: The aim of the conducted research is to assess the level of competitiveness of the EU member states. The Human Development Index (HDI) was adopted as a measure of competitiveness, which determines the competitiveness of EU countries based on the average of three indicators covering fundamental areas of life, namely: health (measured by life expectancy), education (literacy rate, reading comprehension rate, and school enrollment rate), and income per capita (GDP per capita).

Design/Methodology/Approach: The Human Development Index (HDI) enables more accurate international comparisons of countries' social development. HDI is a measure used to prepare annual rankings of countries according to their overall level of development—both social and economic. The first step involved conducting a review of the academic literature. Then, secondary data were collected from various data sources. To assess the competitiveness of EU member states in terms of social development, the coefficient of determination— R^2 —was used. This coefficient measures how well the regression function fits the empirical data. It indicates the proportion of the variance in the dependent variable Y (GDP per capita) that is explained by the explanatory variable X (HDI coefficient).

Findings: A comparative analysis of the HDI ranking for the years 2010 and 2020 showed that the top positions in the global classification of countries based on HDI values were occupied by: Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada, New Zealand, the United Kingdom, and the USA—with Norway, Switzerland, and Iceland consistently at the top. Among EU countries, those with the highest HDI are also those with high economic development measured by GDP per capita.

Practical implications: The article confirms the importance of GDP as a key indicator of success in the development of competitiveness among EU countries. The analysis of social

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and economic effects is a fundamental criterion for determining a country's international competitiveness. In this context, the HDI, which serves to measure the development of individual countries, offers a synthetic approach to this evaluation.

Originality: The article presents the benefits of using the HDI indicator, as comparing its value between countries allows us to determine the development gap between the poorest and richest nations (developing and developed) in terms of their level of social development.

Keywords: Competitiveness, EU member states, human development index.

JEL classification: D2, F3, F4, K2, M2.

Paper type: Research article.

1. Introduction

The competitiveness of the economy is an essential factor enabling the dynamic development of the country, which has a significant impact on improving the wellbeing of society. Low competitiveness is an unfavorable phenomenon that causes automatic exclusion from the market, the need to subordinate to more progressive economies and the loss of autonomy.

A national economy can be considered competitive in the international environment when, in conditions of free trade and free movement of production factors, it is able to develop relatively quickly in the long term. Competitiveness depends on the level of socio-economic development of the country, which influences its productivity and, consequently, increases wealth and prosperity (Thalassinos, 2024).

International competitive position, also called resultant competitiveness, is the level of economic development achieved by a given country in a given period. The analysis of the economic effects achieved by a given country is static. The competitive position of a country refers primarily to the share of a given economy in the international division of labor and broadly understood economic exchange, i.e. in the exchange of both products and production factors. A number of different measures are used to assess the competitive position of a given country.

These include: level of GDP *per capita*, share in world trade, level of exports *per capita*, productivity of the economy per employee, labor productivity per hour of work, salary for one hour of work in the manufacturing industry, entrepreneurship and innovation, number of implemented patents and expenses for B+R. It should be noted that apart from simple quantitative measures for assessing international competitive position, measures obtained using appropriate methods are also used.

These include, indicators of revealed comparative advantage, indicators of intraindustry trade intensity, indicators of export competitiveness and indicators based on the constant market shares method. These measures help assess the results achieved by a given country and enable comparison with other countries in the world or between regions.

However, the static analysis of a country's international competitiveness is not fully comprehensive because it focuses only on results and does not take into account the causes or indicate the sources of competitive advantage achieved by individual countries.

The introduction of the HDI index was intended to increase the importance of noneconomic data when assessing the sustainable development of individual countries. These data were treated as secondary to macroeconomic indicators, and above all to GDP per capita. HDI enables a more complete assessment of the country's level of development compared to GDP per capita or other economic measures.

This indicator is analyzed together with other indicators recommended by the UN Agenda - UNDP (United Nations Development Program) and relating to specific areas (fields) of economic, social and demographic development (Grecu *et al.*, 2024). This indicator is also compared with data showing environmental pollution, the level of personal safety and other aspects of life in a given country. The HDI index is based on the average of indicators that cover three spheres of life, i.e. health, education and the average increase in GDP per capita.

The HDI index ranges from 0 to 1. Therefore, it allows the classification of countries into three groups. The first group includes highly developed countries, i.e. countries for which HDI is above 0.8. The second group consists of countries with an HDI index in the range of 0.5-0.79, these are countries with an average level of human development. The third group consists of underdeveloped countries whose HDI is below 0.5 (UNDP, 2020). The HDI human development index enables the comparison of the international socio-economic development of individual countries.

2. Review of the Literature

Presenting the results of a literature review on the international competitiveness of the economy (EAPN, 2014; Łobacz, 2018; World Bank, 2001; UN, 2021), it is possible to point out the multitude of voices in the discussion on this process, which is the reason for various definitions, modeling and measurement of this economic phenomenon.

The following basic definition of international competitiveness is presented by the World Economic Forum, according to which competitiveness is: *a set of institutions, policies and factors determining the level of a country's productivity.* According to

the World Economic Forum, many different factors are taken into account in the process of examining competitiveness. Some of these factors remain highly correlated and influence the value of the synthetic indicator, e.g., social, economic or spatial.

Competitiveness is also determined at the level of regional economic groupings, e.g. the total of EU countries compared to the economy of the United States or Asian economic groupings (Kalinowski, 2020; Biernat-Jarka and Trębska, 2018; Abraham and Kumar, 2008; ONZ, 2012). Empirical macroeconomic data published by international financial institutions using statistical tools are used to identify and assess competitiveness factors (Noja *et al.*, 2021).

Competitiveness is a set of many measurable and diagnosable phenomena and processes. The international competitiveness of a country is shaped by various external and internal factors, e.g. state economic policy, exchange rates, creditworthiness ratings of countries and domestic enterprises, the system of institutions, regulations and legal systems, as well as other international conditions.

The state's competitiveness in the international arena is a process that must constantly be improved and adapted to changing market conditions (Brady, 2019; Bradshaw and Nieuwenhuis, 2021; Durlauf, 2011). Maintaining competitiveness is related to the modernization of the production equipment, as well as the implementation of innovative solutions in many areas of activity.

An opportunity to maintain or improve the achieved international competitiveness is the continuous process of adapting the economy to changing internal and external conditions. The basic criterion for determining the international competitiveness of a country is the analysis of economic effects, e.g. in terms of trade, creating favorable conditions for acquiring and operating foreign capital, and developing entrepreneurship.

Competitiveness as an economic phenomenon cannot be defined only by producing products and exporting them, but primarily it is a process of knowledge transfer, supporting innovative projects in the economy, know-how, providing technological and social infrastructure, improving the level of education, and reducing poverty. Measurable factors that shape the international competitiveness of an economy include its development rate in the long term and the flow of capital, goods and services (Tomaskovic-Devey, 1991; Bradshaw, 2007; Kumor, 2011; Gebelein and Schiller, 1998).

In order to increase the competitiveness of the economy in individual Member States of the European Union (EU), on June 17, 2010, the European Council adopted a long-term EU socio-economic development program known as Europe 2020 - Strategy for smart, sustainable and inclusive growth (hereinafter referred to as: Europe 2020 Strategy) covering the years 2010-2020.

According to the assumptions of this EU development program until 2020, competitiveness should be improved through activities aimed at building a knowledge-based economy, promoting environmentally friendly technologies and resource-saving management, a low-emission economy, while maintaining social and territorial cohesion in 2020, the implementation of the Europe 2020 Program was completed, constituting the second ten-year strategy in this century, the aim of which was to create conditions for the economic development of the EU based on two basic pillars:

- innovative knowledge-based economy;
- a sustainable economy that increases the efficiency of resource use and is environmentally friendly, while at the same time limiting the phenomenon of social exclusion, promoting employment growth and ensuring high social and territorial cohesion.

The assumptions of the Europe 2020 strategy specify that competitiveness is an essential factor enabling the economy to develop dynamically, which leads to improved society's well-being. The distance in the development of EU countries in relation to key world economies, such as the USA or Japan, and the upcoming competition from the dynamically developing BRICS² countries indicate the need to improve the competitiveness of the EU economy.

The Europe 2020 strategy defines indicators relating to the effective use of the competitive advantage and development potential of EU member states, and their implementation is expected to contribute to the growth of the EU's role on the global market. The value of the target indicators specified in the Europe 2020 strategy is of a general nature and applies to the EU as an international association of independent Member States.

Due to the significant economic and social diversity of the EU Member States, it was allowed to establish indicators for each of them as target values, taking into account their economic development, achievable within the time horizon adopted in the strategy assumptions (Webb, 2016; EP, 2022; Eurostat, 2021; Kroll *et al.*, 2019).

Taking into account the specificity of a given country and its problem areas, it is possible to establish different indicators and measures to ensure the implementation of the objectives of the Europe 2020 strategy. The national indicators and methods of their implementation defined by individual EU Member States have been adapted to the overarching EU objectives adopted in the strategy (Grima *et al.*, 2024; 2025).

The actions specified in the strategy, undertaken individually in the member states, were to result in achieving common EU goals, including strengthening the EU's position in the international arena. Competitiveness is a set of many measurable and diagnosable phenomena and processes (Pradhan *et al.*, 2017, Szymkowiak, 2015; Panek, 2014; Panek and Zwierzchniowski, 2016; Smeeding *et al.*, 1999).

As an economic phenomenon, it cannot be defined only by producing products and exporting them, but primarily it is a process of knowledge transfer, supporting innovative projects in the economy, know-how, providing technological and social infrastructure, increasing the level of education, and reducing poverty.

Measurable factors that shape the international competitiveness of the economy include its long-term development rate and the flow of capital, goods and services (Piacentini, 2014; Dudek, 2018; Panek and Zwierzchniowski, 2013; EPSCO, 2022; Michorowski and Pollok, 2012).

3. Materials and Methods

An important research problem remains the analysis of the level of socio-economic development of individual EU Member States, which improves the competitiveness of the economy and the EU's position in the international arena. Therefore, the aim of this article is to analyze the social development of EU Member States using the HDI index for 2020 compared to the ranking from 2010. The 10-year period covered by the analysis was related to the implementation of the assumptions of the Europe 2020 strategy.

In the group of five indicators used for monitoring the assumptions of the Europe 2020 strategy, indicators characterizing the area of social and economic development of EU countries were listed. Socio-economic development measured by the HDI index was assessed in the context of completing the implementation of the assumptions of the Europe 2020 strategy.

An important research problem is the answer to the question whether and to what extent the assumptions of the Europe 2020 strategy have been implemented and what impact they have had on improving the competitiveness of the economies of individual EU Member States and the European Union as an international organization.

The adopted EU development program called the Europe 2020 strategy was to ensure that in 2020 the EU economy should become the most competitive, promoting sustainable development and focused on improving the living conditions and well-being of EU residents (Thorbecke, 2013; Hwang and Yoon, 1981; Łuczak and Kalinowski, 2020; Kurdyś-Kujawska *et al.*, 2021; Dincer *et al.*, 2021).

The research results showed that the implementation of the assumptions of the Europe 2020 strategy did not bring the expected results and did not significantly improve the competitiveness of the economies of individual Member States and the EU in the international arena.

Programming cohesion policy in the next EU financial perspectives should take greater account of the regional level, for which achievable development indicators

and their financing should be determined. The HDI Human Development Index covers 189 countries. The rankings of individual countries were analyzed according to the level of their socio-economic development.

The article also presents the principles of construction and interpretation of the value of this indicator. By comparing the HDI between countries, the distance between the poorest and the richest countries was determined according to their level of development.

As part of the research, the research hypothesis was verified, assuming that:

H1: In the years 2010-2020, all EU Member States experienced an increase in the Human Development Index (HDI), however, the level of competitiveness of these countries, taking into account human development, varied and depended on GDP per capita.

To assess the competitiveness of EU Member States in terms of human development, the coefficient of determination - R^2 - (Coefficient of determination) was used, which is a measure of assessing the fit of the regression function to the empirical data. This coefficient indicates what part of the variability of the explained variable Y (GDP per capita) was explained by the function of the explanatory variable X (HDI coefficient). The value of the coefficient of determination is in the range [0; 1], the closer the value of this coefficient to one indicates the more accurate fit of the regression function to the empirical data.

A comparative analysis of the HDI ranking for 2010 and 2020 showed that the first places in the world classification of countries in terms of the HDI index value are occupied by: Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada, New Zealand, UK and USA, Norway, Switzerland and Iceland. The group of EU countries with the highest HDI includes countries with high economic development measured by GDP per capita.

The HDI index was introduced by the United Nations and has been presented since 1993 in the form of annual reports by the UNDP (United Nations Development Program). The construction of the indicator defines extreme, target values in each of the three mentioned spheres of the country's social life. The HDI indicator is complemented by three synthetic indicators, constructed based on similar principles.

They take into account the distributional effects of development by gender (GDI - Gender-related Development Index) and women's participation in decision-making processes (GEM - Gender Empowerment Measure), as well as the level of poverty measured in terms of human development (HPI - Human Poverty Index). The poverty index introduced in 1997 determines the poverty line in accordance with the assumptions of the concept of human development based on the weighted average of

three indicators including minimum health, education and minimum material conditions.

It is worth noting that for developing countries, where many people do not have a stable income, the GDP *per capita* indicator was not used to determine the minimum material conditions, but a weighted average in terms of meeting basic needs in the field of nutrition, access to water and medical services. For highly developed countries, the HDI index includes the long-term unemployment rate and the level of functional illiteracy.

HDI enables international comparison of specific indicators for individual countries describing effects in the field of human development. This indicator is a measure that is used to develop rankings according to the level of their overall development - social and economic - over a specific period of time.

By comparing the value of this indicator between different countries, it is possible to determine the distance between the poorest and the richest countries (or, in other words, developing and developed countries) in terms of the level of civilization development (Sompolska-Rzechuła, 2021; Cousineau and Chartier, 2010; Aguinis *et al.*, 2013; Hawkins, 1980; Trzęsiok, 2014).

Four basic measures are directly used in the calculation of the synthetic HDI:

- ➢ average life expectancy,
- general gross enrollment rate for all levels of education introduced for the first time in determining the HDI for 1992 - instead of the previously used average number of years of schooling among adults aged 25 and over,
- reading comprehension and writing skills index; the last two indicators are transformed into one measure illustrating the average level of educational achievements of society,
- gross domestic product (GDP) in USD, per capita, calculated according to the purchasing power parity of the currency (PPP USD).

The HDI index determines the level of social development of a given country compared to the development of other countries, both at a given time and in the longer term. Poland, with an index of 0.85, is among the highly developed countries. The criteria used to classify countries into highly, medium and poorly developed, taking into account the HDI, are as follows:

- 0 0,5 underdeveloped country (backward),
- 0,501 0,8 moderately developed country,
- 0,801 1,0 highly developed country.

In 2010, Poland took 32nd place (out of 55 countries in the most developed group) in the ranking of 189 countries in the world. The distance between Poland and the countries in the top twenty is relatively large (approx. 0.1 point of the HDI value).

In 2021, as in previous years, the group of 20 most developed countries includes almost all European Union countries (except for Greece, Portugal and Italy). The group of the most socially developed countries includes: Norway, Switzerland and Iceland and five non-European countries; with as many as four of them: Australia, the United States of America, Canada and Japan - occupying places in the top ten, followed by New Zealand.

Among European countries, the best position in 2021 was held by, Norway, Sweden, Iceland and Switzerland. Poland's position in the ranking according to HDI was higher (position 32) than in the ranking according to GDP *per capita* (position 52). This indicates that health status and educational outcomes are higher than the level of economic development. Sweden and post-socialist countries, as well as South American countries (except for Brazil), have high differences between economic and social development, in favor of the latter.

The Human Development Index (HDI) is a measure developed by the United Nations and used to quantify "a country's average achievement in three basic dimensions of human development: long and healthy lives, knowledge and a decent standard of living".

The Human Development Index value is determined by combining a country's performance across a broad range of indicators, including life expectancy, literacy rate, rural access to electricity, GDP per capita, exports and imports, homicide rate, multidimensional poverty index, inequality in income, Internet availability and many others.

These indicators are compiled into one number from 0 to 1.0, with 1.0 representing the highest possible development of the country. HDI is divided into four levels: very high level of country development (0.8-1.0), high level of development (0.7-0.79), medium level of development (0.55-0.70) and low level development (below 0.55). One of the most famous proposals of this type is the Human Development Index (HDI) promoted in the global human development reports of the United Nations Development Program. To put it simply, apart from GDP per capita, two more aspects of the population's situation are most often taken into account: life (health) and education.

4. Results and Discussion

HDI (*Human Development Index*) as an indicator is the geometric mean of three indices expressing: gross national income (GNI) *per capita*, life expectancy and level of education, which are intended to reflect the three main dimensions of social

development, healthy and long life, thorough knowledge and a decent standard of living (Lira *et al.*, 2002; Łuczak and Wysocki, 2013; Spicker, 1998; Gołębiowska and Kuczyńska-Zonik, 2021; Miłaszewicz *et al.*, 2018). This indicator takes numerical values from 0 to 1 (higher values mean a higher level of development). According to the UNDP report (2021) referring to data from 2020, the leaders of the world classification in terms of HDI values are: Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada, New Zealand, UK and USA.

In 2020, in the group of Central and Eastern European countries, the highest position in this ranking is held by Slovenia (23), followed by, the Czech Republic (25), Estonia (29), Poland (32), Lithuania (33), Slovakia (36), Latvia (38), Hungary (43), Croatia (45), Bulgaria (52) and Romania (53).

In terms of the value of this indicator, Poland ranks slightly above the average for Central and Eastern Europe (the value of the indicator in the case of Poland is equal to 0.871 compared to the average for 11 countries of Central and Eastern Europe of 0.858), but in this respect it ranks only 32nd in the world, in among 189 classified countries.

Among the EU countries in terms of the value of this indicator, Poland ranks 20th, ahead of Lithuania, Slovakia, Latvia, Portugal, Hungary, Croatia, Bulgaria and Romania. The value of the HDI index in Poland is systematically increasing, which proves the progressing socio-economic development.

At the same time, its place in the world HDI ranking remains quite distant, although it is still higher than its corresponding position in the world in terms of the level of economic development measured by GDP per capita alone (43rd place in 2021 according to data from the International Monetary Fund).

The 2021 HDI ranking includes 10 EU member states in the group of 20 countries with the highest human development index (HDI 2020). In the case of 10 EU countries, the HDI index was above 0.9, i.e. Germany - 0.947 (with a population of 83.8 million), Sweden - 0.943 (10.2 million), the Netherlands 0.944 (17.2 million), Denmark - 0.940 (5.8 million). In the remaining 17 countries, the HDI index ranged from 0.816 to 0.891 (Figure 1).

Most developed countries had an HDI score of 0.8 or higher (at a very high level of human development). These countries have stable governments, universal education, health care, high life expectancy, and growing, powerful economies (Canale *et al.*, 2019; Hujo and Gaia, 2011; Hoelscher *et al.*, 2009; Karanikolos, 2013).

In contrast, there are the world's least developed countries (LDCs), which tend to have HDI scores below 0.55 in the "low human development" category.

Figure 1. Human Development Index (HDI) - 2020 ranking for EU member states along with the population of people living in individual countries



Source: World Population Review, https://worldpopulationreview.com/country-rankings/hdiby-country.

The least developed countries are characterized by unstable governance, widespread poverty, lack of access to health care, and poor education (Ifanti *et al.*, 2013; OECD, 2011; Zabarauskaite-Mieziene and Krutuliene, 2019).

In addition, these countries have low incomes and low life expectancy, combined with high birth rates. This illustrates the primary purpose of the HDI: to help the United Nations determine which countries (especially which least developed countries) need assistance (UNDP, 2020).

The analysis of the HDI index value calculated for 2020 compared to 2010 showed that in the case of 10 EU member states, their position in the ranking improved. This included, among others: HDI index of Ireland (from 17 positions in 2010 to 4 in 2020), Sweden (from 10 to 7), Spain (from 27 to 24), Estonia (from 32 to 29), Poland (from 33 to 32), Lithuania (from 36 to 33). In the case of the remaining 17 EU member states, their position in the HDI ranking deteriorated (or remained at the same level). This included, among others: Belgium (from 11 to 16), Slovenia (from 22 to 23), Greece (from 29 to 31), Romania (from 46 to 53) (Figure 2).

In 2010, 9 EU countries (classified as highly developed countries) achieved an index above 0.9, and for 18 countries it ranged from 0.805 to 0.898. In 2020, compared to 2010, 14 EU countries improved their position in the HDI ranking (including Ireland, Sweden, Spain, Czech Republic, Estonia, Cyprus, Poland, Latvia, Bulgaria),

while the position of 13 countries in the ranking worsened (including Belgium, Austria, France, Denmark, Finland, Luxembourg, Slovenia).

Figure 2. Human Development Index (HDI) - index value for 2010 and 2020 for EU Member States



Source: World Population Review, https://worldpopulationreview.com/country-rankings/hdiby-country.

The highest position in the ranking was occupied by EU countries with high GDP per capita, i.e. Sweden, Germany, the Netherlands, Denmark and Ireland. The places in the final ranking were occupied by the economically weakest countries (Bulgaria, Croatia, Hungary) (Figure 3).

The leaders in the world classification in terms of HDI values are, Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada, New Zealand, Great Britain and the USA Norway, Switzerland and Iceland and five non-European countries; and as many as 4 of them: Australia, the United States of America, Canada and Japan - occupy places in the top ten, followed by New Zealand (Figure 4).

Socio-economic development is measured by the unemployment rate. According to Eurostat data, in December 2020 the unemployment rate across the EU was 6.5%, while in 2010 it was 10.2% (Figure 5). Countries with the highest unemployment rate included Spain (16.2%) and Greece (17.9%). The highest growth rate of this indicator was recorded in Cyprus. The labor markets in Austria (4.9%), Germany (5.2%) and Luxembourg (5.8%) were affected by the lowest unemployment rate.

Unemployment decreased the most in Latvia (from 12.6% in 2010 to 5.6% in 2020). The data for the European labor market are worrying among the group of young people up to 25 years old. In December 2020 Greece was hit by unemployment of

41.5% of young people, while in Spain in 2020 the percentage of young unemployed people was 26%, in Austria (8.6%), the Netherlands (11.4%) and Denmark (11.5%). In Poland 8% of young people remained unemployed. The lowest level of unemployment among young people occurred in Germany (4.7%).

Figure 3. Human Development Index (HDI) - ranking 2010 and 2022 for EU member states (out of 189 countries in total included in the HDI 2010, 2022 ranking) (the lowest position - the best, the highest - the worst)



Source: https://worldpopulationreview.com/country-rankings/hdi-by-country

Figure 4. Human Development Index (HDI) - 2022 ranking for selected countries around the world



Source: Eurostat; www.stat.gov.pl/gus/5840_12681_PLK_HTML.htm.





Figure 5. Unemployment rate in EU Member States in 2010 and 2020 (in %)

Source: Eurostat; www.stat.gov.pl/gus/5840_12681_PLK_HTML.htm.

Eurostat measures the unemployment rate as a percentage of people aged 15 to 74 who are unemployed, able to take up employment within the next two weeks, and who have been actively seeking work in the last few weeks in relation to all economically active people in a given country. The Polish Central Statistical Office (GUS) uses a slightly different methodology.

According to GUS data, the unemployment rate is measured as the percentage of unemployed people registered in employment offices in relation to the entire economically active civilian population. A high unemployment rate in relation to the number of people in the workforce occurred in the EU Member States that applied to the Community in 2004, i.e., in Lithuania, Estonia, Latvia (Figure 6).

GDP or GDP per capita is not a perfect measure of broadly understood economic processes. Using only this indicator to assess the economic situation of the population and its changes over time in one or many countries is completely unjustified. The simplest answer to this state of affairs is to take into account other indicators in the assessment of the population situation, in addition to GDP and GDP per capita (Lafortune *et al.*, 2021; Walenia, 2021; Hirschl, 2011).

One of the most famous proposals of this type is the Human Development Index (HDI) promoted in the global human development reports of the United Nations Development Program.



Figure 6. Unemployment rate relative to the number of people in the labor force in 2010 and 2020 (in %)

Source: Eurostat; www.stat.gov.pl/gus/5840_12681_PLK_HTML.htm

The GDP per capita indicator used in the presented analysis is only approximate and an indicative measure of the standard of living (OECD, 2008; Sabir and Tahir, 2010; Bergstrom, 2022). Its value depends on many different factors, not only economic ones. Several alternative measures of the level of socio-economic development to GDP per capita have been defined in the literature.

The basic measures of income competitiveness refer to gross domestic product (GDP), most often GDP per capita determined on the basis of purchasing power parity, which is one of the most frequently used macroeconomic measures.

This indicator has long been a determinant of the division into developed and developing countries, showing polarization in the socio-economic development of individual countries. At the same time, GDP is the most frequently used measure of the impact of the economic crisis on the economies of individual countries in the context of both the current crisis.

The European Union includes 27 countries with very different sizes and economic potential. The four largest countries in terms of population and production volume -

Germany, France, Italy and Spain - in the 2020 ranking - comprised 57% of the total population of the EU-27 countries and generate 63% of total GDP calculated according to RKW or 60% according to PPP.

All 14 countries currently part of the EU and included in the Western European area (EU-14) represent 77% of the total population and generate 89% of the total GDP according to RKW or 82% in the case of PPP. In contrast, the 13 new Member States that joined the EU in 2004 and 2007 or later, i.e., 11 Central and Eastern European countries plus Cyprus and Malta, represent 23% of the total population but produce only 11% or 18% of the total EU GDP.

This significant asymmetry between the "old core" of the Union and the new member states (between Western Europe and Central and Eastern Europe) should take into account Poland's place in the EU. The highest place in the GDP ranking was occupied by: Germany, France, Italy, Spain, while the lowest place in the GDP ranking was taken by: Malta, Cyprus, Estonia, Latvia (Fig. 7).

Data analysis (Figure 5) shows that in 2020 the average GDP per capita in the European Union countries (EU-27), calculated according to PPP, amounted to USD 43,616, and in the countries belonging to the Union even before its enlargement (EU-27). 14) – USD 46,864.



Figure 7. Ranking of EU-27 countries in terms of GDP per capita according to PPP (USD)

Source: Own work based on Ranking out of 67 countries, World Competitiveness Ranking, IMD, https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/rankings/wcr-rankings/#_tab_Rank. (Walenia A. et al., 2024).

Income levels across EU member states vary greatly. The leader in terms of GDP per capita is Luxembourg (\$112,875), followed by Ireland (\$89,383). Denmark, the Netherlands, Austria, Germany, Sweden, Belgium, Finland and France also have high income per capita (from USD 45,000 to USD 60,000). Slightly lower per capita incomes (between USD 40,000 and USD 45,000) are found in Malta, the Czech Republic and Italy.

Other EU countries have lower incomes (less than USD 40,000). In the countries of Central and Eastern Europe, GDP per capita ranges from USD 23,741 (in Bulgaria) to USD 40,293 (in the Czech Republic). Poland's position in this context does not look impressive. With a GDP per capita according to PPP of USD 33,739 in 2020, Poland took 19th place, which means that it was classified in the lower part of the ranking of the countries of the enlarged EU, ahead of Portugal, Hungary, Slovakia, Latvia, Romania, Greece, Croatia and Bulgaria.

Due to the recession during the Covid-19 pandemic, Poland's position in the ranking in terms of per capita income according to PSN improved by several places compared to previous years.

GDP per capita has also increased significantly in the EU over the last few years. While the average level of GDP per capita in the 27 EU member states was PLN 24,000 at the beginning of 2010. euro, at the beginning of 2020 this value was approx. 32 thousand. euro. In 2020, the highest GDP per capita was recorded in Luxembourg, Denmark, Sweden and Ireland, while the smallest were in Romania, Bulgaria, Lithuania and Latvia (Figure 8).



Figure 8. Gross domestic product in EU Member States per capita at market prices in euro in 2010 and 2020

Source: https://worldpopulationreview.com/country-rankings/hdi-by-country

The analysis of the dynamics of changes in the HDI index and GDP per capita for the EU Member States confirmed that the increase in GDP per capita resulted in an increase in the HDI index informing about progress in the field of digitization and innovation in the economy (Beales *et al.*, 2020; Sowa and Wilczyńska, 2015; Walenia *et al.*, 2024).

For all EU member states, the increase in human development was associated with the increase in GDP per capita (Figure 9). The calculated coefficient of determination (R^2), taking into account the relationship between GDP per capita and the HDI value for EU Member States for 2020, showed that for five countries this indicator was 0.4499, and for 22 countries 0.7028. The value of the determination coefficient (R^2) indicates that for the vast majority of EU countries the process of improving social conditions is visible as an important factor of competitiveness.

With a view to reducing the development gap between Poland and highly developed countries (reaching 74% - 79% of the average level of GDP per capita in the EU in 2020), it becomes necessary to pursue a development policy that stimulates economic growth based on improved innovation and the use of potentials related to creativity and entrepreneurship of society and the ability to cooperate, therefore it is necessary to move from focusing on "quantitative growth" towards a knowledge-based economy (Walenia *et al.*, 2024).

Figure 9. Relationship between GDP and the HDI index for individual EU member states



Source: https://worldpopulationreview.com/country-rankings/hdi-by-country

5. Conclusions

HDI is a measure used to prepare annual rankings of countries according to their overall level of social and economic development. Comparing the HDI index values between different countries makes it possible to determine the distance between the poorest and the richest countries (developing and developed) in terms of the level of human development. HDI (Human Development Index) is the basic development measure used in the work of UNDP.

The introduction of this indicator was intended to take into account non-economic factors when assessing the sustainable development of individual countries. HDI enables a more accurate assessment of the level of human development in countries. To assess the competitiveness of countries, the HDI indicator is analyzed together with other indicators recommended by UNDP and relating to specific areas (fields) of economic, social and demographic development, as well as with data showing environmental pollution, the degree of personal safety and other aspects of life in a given country.

HDI is a measure used to prepare annual rankings of countries according to their overall level of development - social and economic. Most developed countries had an HDI score of 0.8 or higher, defined as a "very high level of human development." These countries are characterized by stable governments, universal education, health care, high life expectancy and growing economies. The opposite are the least developed countries in the world (LDC), whose HDI values are below 0.55 and are classified in the "low human development" category.

The least developed countries are most likely to experience unstable governments, widespread poverty, lack of access to health care, and poor education. Furthermore, these countries are characterized by low incomes and low life expectancy coupled with high birth rates. This classification results from the HDI's primary goal of helping the UN identify which least developed countries need assistance.

The research results made it possible to verify the adopted research hypothesis. Research has shown that in the years 2010-2020, there was an increase in the Human Development Index (HDI) in all EU Member States, however, the level of competitiveness of these countries, taking into account human development, varied and depended on GDP per capita.

The analysis of the HDI index value calculated for 2020 compared to 2010 showed that in the case of 10 EU member states, their position in the ranking improved. This included, among others: HDI index of Ireland (from 17th position in 2010 to 4th in 2022), Sweden (from 10th to 7th), Spain (from 27th to 24th), Estonia (from 32nd to 29th), Poland (from 33rd to 32nd), Lithuania (from 36th to 33rd). In the case of the remaining 17 EU member states, their position in the HDI ranking deteriorated (or remained at the same level).

This included, among others: Belgium (from 11th to 16th), Slovenia (from 22nd to 23rd), Greece (from 29th to 31st), Romania (from 46th to 53rd).

By comparing the value of this indicator between different countries, it is possible to determine the distance between the poorest and the richest countries (developing and developed) in terms of the level of civilization development. The analysis of the HDI ranking for 2010 and 2020 showed that the leaders of the world classification in terms of the HDI index value are: Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada , New Zealand, UK and USA, Norway, Switzerland and Iceland and five non-European countries; with as many as 4 of them: Australia, the United States of America, Canada and Japan - ranking in the top ten.

The analysis of HDI rankings showed that EU member states do not differ much in terms of this indicator. The group of EU countries with the highest HDI index includes countries with high economic development measured by GDP per capita.

In 2010, 9 EU countries (classified as highly developed countries) achieved an index above 0.9, and for 18 countries it ranged from 0.805 to 0.898. In 2020, compared to 2010, 14 EU countries improved their position in the HDI ranking (including Ireland, Sweden, Spain, Czech Republic, Estonia, Cyprus, Poland, Latvia, Bulgaria), while the position of 13 countries in the ranking worsened (including Belgium, Austria, France, Denmark, Finland, Luxembourg, Slovenia).

The highest position in the ranking was occupied by EU countries with high GDP per capita, i.e. Sweden, Germany, the Netherlands, Denmark and Ireland. The places in the final ranking were occupied by the economically weakest countries (Bulgaria, Croatia, Hungary).

The introduction of the HDI (*Human Development Index*) was intended to take into account non-economic data when assessing the sustainable development of individual countries. In the process of assessing human development, the HDI indicator is considered superior to other macroeconomic indicators, and above all to GDP. HDI enables a more accurate assessment of the country's level of development, such as GDP per capita or other economic measures.

Therefore, HDI is analyzed together with other indicators recommended by UNDP and relating to specific areas (fields) of economic, social and demographic development, as well as with data showing environmental pollution, the degree of personal safety and other aspects of life in a given country. HDI is a synthetic measure based on the average of indicators covering three basic areas of life.

This is the sphere of health (assessed by the average life expectancy index), education (literacy index, i.e. the ability to write and read with understanding, and schooling index) and per capita income (GDP *per capita*). The methodology for

calculating the indicator includes the average of the indicator values in each of the above-mentioned areas. The information contained in the HDI does not include elements relating to the concept of human development because not all qualitative features of development can be measured, and for many, data is missing because it is not generated.

The HDI complements three synthetic indicators constructed on similar principles, taking into account the distributional effects of development by gender (*Gender-related Development Index* - GDI) and women's participation in decision-making processes (*Gender Empowerment Measure* - GEM), as well as the level of poverty measured in terms of human development (*Human Poverty Index* (HPI).

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