
THE PERCEPTION OF WELL-BEING IN EUROPEAN COUNTRIES

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Abstract

This paper deals with the identification of factors that influence the level of subjective well-being of the population in selected countries. The analysis is based on the data from 30 countries, which are classified into groups with similar characteristics by a cluster analysis. The paper then further examines the functional relationship between well-being and the presumed factors with the use of the multiple regression model (OLS method). The factors used for the analysis were the relevant economic and demographic indexes. The results of the regression analysis demonstrate that significant factors included the net income indicator and the risk of poverty rate. The obtained models also indicated a negative impact of the risk of poverty rate and a positive impact of the net income on subjective well-being below the designated level of significance.

Key Words

Cluster analysis; multiple regression analysis; net income; risk of poverty rate; well-being.

INTRODUCTION

Countries have always sought to coordinate their national policies in a way that contributes to increasing the prosperity, standard and quality of life of their citizens. This intention, according to Dalziel et al. (2018), is mostly fulfilled through efforts to increase economic growth. This is based on the assumption that poverty reduction is associated with a higher quality of life. A high economic level of a country undoubtedly contributes to better living conditions, higher wages, and possibly better job opportunities. Therefore, many economists have begun to wonder whether this is sufficient. There has been a growing interest in more comprehensive measures of economic activity and social development. In this context, the concept of subjective well-being has increasingly emerged to best capture an individual's subjective assessment based on individual judgements related to overall life. The notion of well-being first came to the public's attention with the publication by the eminent economists Stiglitz et al. (2009), which concluded that GDP is an unreliable measure of the state of a country and that other factors should be taken into account when making policy.

Among the authors of the research of the given issue, there are various conclusions and opinions on whether the economic level is at the same time a sufficient identifier of the aforementioned well-being of the population in a country. Experience also shows that the pursuit of growth may result in economies that, on the contrary, reduce well-being. Lovo (2014) notes that an essential reason for studying well-being is to obtain an international comparison by examining the determinants of potential migrants for choosing a target country. While governments primarily look at indicators such as GDP, people may consider other aspects as indicators that make a country more attractive. Lovo (2014) found that potential migrants are more attracted to countries with higher average life satisfaction. This implies that life satisfaction measures are more reflective of a country's level of success than the standard macroeconomic indicators. This has begun to highlight the importance of also considering aspects of people's satisfaction and subjective well-being for deciding what social goals to focus on and what policy decisions to take.

Over the past few decades, several studies have been conducted on various variables and their relationship to well-being in the search for answers to the question of what actually influences the well-being of the population of a country. These studies mostly focus on indicators of income, income inequality, unemployment, or the aforementioned GDP. However, the conclusions of these studies do not produce consistent results.

It is the existence of these different conclusions that has prompted our research of the links between subjective well-being and the factors chosen in this work from other expert studies. This study concentrates on examining the relationship between the selected determinants and well-being in selected European countries, and on classifying the countries into the groups based on their similarities.

THEORETICAL BACKGROUND

Income appears to be one of the most important determinants, with a logically expected positive effect on happiness and hence well-being. The relationship between income and well-being has attracted quite a lot of interest, as demonstrated by the largest part of literature and research dealing with this topic in comparison with other determinants of well-being. According to Stutzer (2004), it is assumed that people's well-being depends on how much income they have in absolute terms. Their study shows a positive correlation between income and well-being.

According to Blanchflower and Oswald (2005), the idea that "income buys happiness" is more or less based on deductive considerations than on real research. Caporale et al. (2009) confirmed the positive correlation between income and well-being, but this relationship, according to earlier research, may not necessarily be valid in every case. For example, Easterlin's (1974) results showed that when a country's real income increases continuously, happiness ceases to have an increasing tendency over time. He considers the existence of a certain point in the income level above which well-being ceases to be correlated with income. This fact is also known as the Easterlin paradox. Nevertheless, Degutis et al. (2010) clearly suggest that the denial of the relationship between income growth and life satisfaction defended by Easterlin is certainly incorrect. Haushofer and Fehr (2014) also recently found that the aforementioned point does not exist, and that higher income is also associated with greater life satisfaction. In the article Bencsik and Chuluun (2021) point out the importance of income for individuals in the population.

Blanchflower and Oswald (2004) further add that more than income itself, people respond to relative income - defined as the ratio of an individual's income to the national average income per capita. The assessment of one's subjective economic situation plays an important role in one's perception of one's own life. Hovi (2021) used micro-data from 30 countries in his study. The results also suggest that, despite aspirations, higher income improves life satisfaction even in high-income countries where aspirations totally offset emotional well-being. In this context, according to Stutzer (2004), it is not about the absolute level of income, but about the position of the individual in comparison to others. Caporale et al. (2009) demonstrated a negative relation between income inequality, defined as reference income, and well-being. They also pointed out differences between Western and Eastern European countries, whereby in Eastern European countries they found a positive effect of reference income. Therefore, a double effect of income inequality on well-being emerged. Probably less expected, a positive effect tends to be explained through Zagórski's hope factor (1994) or Hirschman's tunnel effect (1973). Both terms describe a kind of optimistic view of individuals about the increasing income of another group of people, as a signal of a potential increase in their income in the near future (Hirschman, 1973).

The results of the research conducted by Hajdu and Hajdu (2014) provide evidence that while income inequality is not a significant determinant of well-being in Western European countries, its effect in Eastern European countries is strongly negative. In addition, they also provide clear evidence that reducing income inequality positively affects an individual's well-being.

Kelley and Evans (2017) are partly inclined to the results of Hajdu and Hajdu (2014) by arguing that in developed countries income inequality is irrelevant to an individual's well-being. In developing societies, on the other hand, as economic growth increases, inequality and well-being increase simultaneously. This increase in well-being, despite rising inequality, is explained by the aforementioned hope factor, where individuals associate inequality with opportunities, i.e., hope for the future. In the effect of income inequality in less developed countries, the result is consistent with the study of Caporale et al. (2009).

Income and the amount of income are undoubtedly related to a lack of it. Haushofer and Fehr (2014) point out that poverty may lead to negative psychological consequences such as stress. Molotsky and Handa (2020) also agree with this statement, adding that material deprivation also affects an individual's future behavior and decision-making in this way. Of the 25 reviewed studies identifying the impact of poverty on well-being, 18 found a significant positive association between poverty alleviation and aspects of psychological well-being or stress (Haushofer and Fehr, 2014). However, studies have been conducted in countries with extreme poverty, where this factor has a significantly greater negative impact on the lives of individuals compared to European countries. Therefore, there is a slight assumption that this variable will not be significant in places without the presence of extreme poverty.

An important part of human life, and therefore also the issue at hand, is any factor relating to the working status of the population. The resulting effect of unemployment on well-being is, from a simple consideration, clearly negative. Nikolova and Graham (2014) confirm the expected negative impact of unemployment on well-being. The results of Knabe and Rätzl (2010) lean more towards a negative dependence. Although the employed are more satisfied with life than the unemployed, Knabe et al. (2010) explain that the unemployed may use more of their free time for more enjoyable activities than work, and therefore their level of well-being is ultimately not very different from that of the employed. This implies a neutral effect of unemployment. This neutral effect was confirmed in a study by Dolan et al. (2017). The work by Hoang and Knabe (2021), which builds on the study by Dolan et al. (2017), among others, points out that inconsistent research results may be due to the definition of work status and also the choice of how well-being is measured. According to them, two opposing effects operate between well-being and unemployment. On the one hand, the unemployed may suffer from feelings of inferiority and fear of no income. On the other hand, the employed tend to be more tired and stressed. In the article, Svetek and Drnovsek (2021) examine the impact of different types of business activities on subjective well-being of nations. Based on modeling,

they found that opportunity-driven entrepreneurial activity has a positive impact on subjective well-being.

At first glance, it may seem that there is not much to investigate in the link between education and well-being, and the impact of education is logically positive. However, many studies over the years have yielded results that contradict each other. The study by Blanchflower and Oswald (2004) shows that education has the expected positive effect on well-being as mentioned above. Their study also shows that education has an effect on its own, independent of the effect of the expected higher income associated with higher education. Stutzer (2004) argues that people with an average level of education report greater satisfaction than people with low or, conversely, high levels of education. Dockery (2010) found a negative relationship between education and well-being. However, he was unable to explain the reasons for this negative relationship.

Powdthavee et al. (2015) looked at both the direct and indirect effects of education on life satisfaction. They revealed the indirect effects by multiple modelling through five different channels: income, marriage, employment, number of children and health. This revealed a significant negative correlation between education and life satisfaction. On the other hand, the indirect effects of education on life satisfaction through income, employment, marriage, and health were positive and statistically significant, with the largest estimated indirect effect of education on life satisfaction being through the income channel. Kristoffersen (2018) explains that the often common negative correlation between education and well-being may seem illogical, but is in fact consistent with the idea of a link between higher education and higher expectations of life circumstances. Therefore, his research takes a different angle, one that focuses on these expectations of individuals. A positive correlation may only occur if the ability to meet these expectations were increased by education, which may not actually be the case. In general, a moderate positive correlation is observed, but due to real life situations, the overall association between education and well-being is neutral.

In support of a link between well-being and migration, Polgreen and Simpson (2011) suggest that the relationship between migration and well-being may be twofold. The first is where well-being affects migration and the opposite where migration affects well-being. The latter is based on the assumption that the presence of immigrants may affect the well-being of residents in a given country. It is the effect of the presence of immigrants in a given country that appears to be interesting to examine. The conclusions of their research come with the assertion that although the direction of causality between well-being and migration cannot be discerned in the context of the available data, a relationship between them does exist. Based on simple reasoning, one would expect that if this relationship were significant, it would be negative. However, given the lack of research and data in this area, it is not possible to say this with certainty.

Continuing with the assumption that high economic growth is the best means of contributing to improving the well-being of the population, the question of how these two facts relate to each other in reality arises.

Presumably, if there is any relationship between GDP and well-being, it will certainly be a positive one. Raising the economic level of a country should clearly have a positive impact on the population and increase their well-being. The problem here, however, is that this relationship seems to be questionable based on the research, and even differs in developed and developing countries. The research performed by Easterlin (1974) on the dependence of economic growth and well-being showed no clear relationship between these two variables in developed countries. Kenny (1999) wonders whether economic growth affects well-being or whether the direction of influence is opposite. He notes that it is possible that both factors influence each other. A certain economic level is necessary for individual happiness, but there may also be a causal link in the direction from happiness to greater economic growth. But this relationship is not considered important in rich countries, where the meaning of happiness has long been separated from the means of economic growth.

Using the specific example of oil purchases, Stiglitz et al. (2009) argue that such purchases increase GDP but do not lead to an increase in welfare or well-being. This tends to suggest that there is no relationship between economic growth and well-being, at least not a significant one. Thomas and Evans (2010) based their study on the publication by Stiglitz et al. (2010). They agree that the measurement of output (GDP) does not cover the relevant dimensions of subjective well-being. The results of their research, conducted on UK data, showed that over the 33 analyzed years GDP evolved significantly differently to subjective life satisfaction. While GDP trended upwards, the satisfaction indicator remained constant. Because of the contentious relationship between GDP and well-being in developed countries, Kenny (2005) focused on less developed and developing countries, with the assumption that at least there the relationship may be strong and unambiguous. The research results suggest, however vaguely, that there is some sort of relationship between economic growth and increases in well-being in developing countries.

Di Tella et al. (2003) believed that macroeconomic aggregates, which include GDP, matter in relation to well-being. Their research shows that people's responses to happiness and satisfaction are strongly correlated with GDP per capita, which is a key finding of the study. An important question, according to Di Tella et al. (2003), is whether economic growth leads to a permanent or only temporary increase in national satisfaction. They concluded that, based on the statistical research conducted, both are possible. The time series analysis performed by Stevenson and Wolfers (2008) determined that in many cases happiness tends to increase in countries during periods of economic growth. An even larger increase is observed when economic growth is faster. Different results were determined for the US, where no significant increase in well-being in relation to GDP was observed. In contrast, Japan and Europe were mentioned as being prime examples of the upward trend in well-being during periods of rapid economic growth.

Stevenson and Wolfers (2008) reiterated that research providing data on well-being are limited and, therefore, may be less clear and biased. Nevertheless, they agree with the hypothesis of a positive relationship between GDP and well-being; therefore, like Di Tella et al. (2003), fall into disagreement with claims that economic growth does not bring happiness. In relation to this inconsistency with previous assumptions about the insignificance of the relationship between GDP and well-being, a study using correlation and regression analysis by Degutis et al. (2010) demonstrates that GDP is positively related to levels of life satisfaction. The findings also suggest that the relationship is particularly strong in Eastern European countries, but also remains positive in many Western countries, which partially confirms the assumptions of Kenny (2005) that the relationship is stronger in developing countries.

RESEARCH OBJECTIVE, METHODOLOGY AND DATA

For the purpose of the analysis, a period of three years was chosen, namely 2016, 2017 and 2018, with 30 selected EU countries being examined. The years and the countries were selected based on the availability of the necessary data. The data required to carry out this work were collected from credible public databases, specifically from the Eurostat and Gallup World Poll (GWP). The well-being data were taken from the GWP questionnaire survey, which is also the main underlying source for the World Happiness Report. GWP uses Cantril's ladder to measure subjective well-being. It is a scale with a range of 1-10, where 10 is the best possible imaginable life and 0 is the worst possible life (Cantril, 1965). Thereby, well-being is an artificial quantity without a unit.

Annual data of net income, the Gini coefficient, risk of poverty rate, unemployment rate, number of tertiary graduates, number of immigrants, and GDP per capita were selected as the assumed variables whose relationship with well-being will be examined in this paper. Table 1 summarized the basic characteristics of these variables.

Table 1: Characteristics of individual variables in 2018

Variable	Average	Min	Median	Max
Well-being	6.6336	5.099	6.591	7.858
Net income	16 459	6 278	17 110	27 529
Gini coefficient	29.7	20.9	29	39.6
Risk of the poverty rate	21.5	12.2	19.8	32.8
Unemployment rate	6.4	2.2	5.5	19.3
Number of tertiary graduates	74.3	21.2	72.1	146.2
Number of immigrants	157 958	7 253	74 424	893 900
GDP per capita	31 903	15 500	28 550	79 000

Source: Own survey.

The examination of the relationship between well-being and the variables considered is based on a multiple regression analysis, and on the ordinary

least squares method, which was also used in studies by Dolan et al. (2017), Zámková and Blašková (2013) and Adamec and Střelec (2012). The explained variable is well-being, whose determinants will be examined.

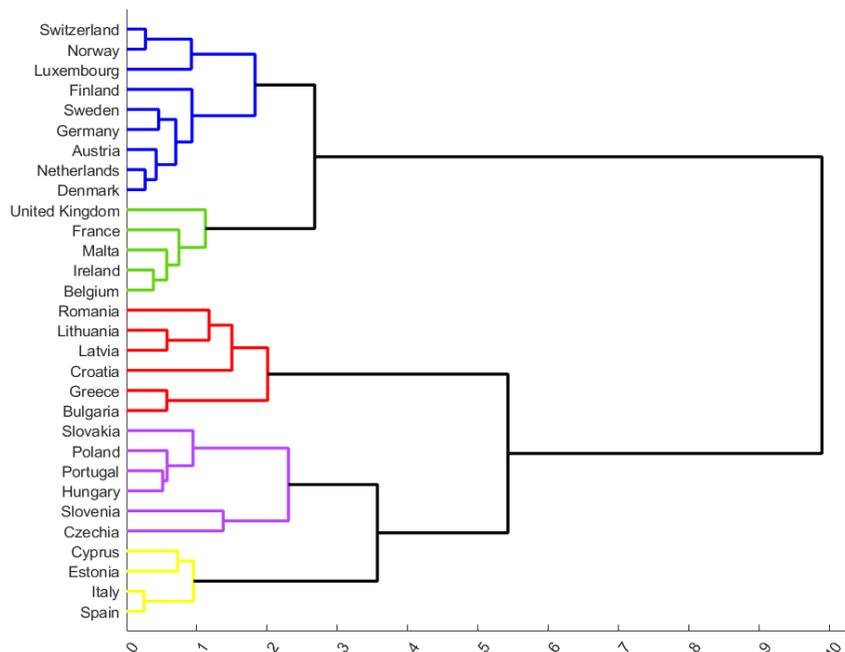
Cluster analysis is used to compare and classify the studied 30 European countries into groups based on the selected characteristics like in Kabát et al. (2014) and Blašková and Bohušová (2013). Clusters are formed on the basis of similarities. Similar to Staňková and Hampel (2017), Euclidean distance is used for clustering and Ward’s method is used to calculate the differences between the clusters. The result of the cluster analysis is presented in the below dendrogram.

RESULTS

Cluster analysis

As part of the work, the years 2016–2018 were analyzed. In all of these years, the results of the analysis were approximately the same and, therefore, the year 2018 is further presented with the use of the below dendrogram. The best obtained outcomes for the three years were constructed based on well-being, net income, and the risk of poverty rate. Figure 1 shows the resulting dendrogram for 2018, demonstrating the classification of countries into five clusters.

Figure 1: Dendrogram using data from 2018



Source: Own survey.

The first cluster includes the developed countries of northern and western Europe, namely Denmark, Luxembourg, Switzerland, Norway, Finland, Sweden, Austria, Germany, and the Netherlands. For the countries Austria and Germany, there was a change in the cluster classification during the years under review. In 2016, they belonged to cluster 2, but in 2017 Austria joined cluster 5. The cluster is characterized by the highest average value of well-being compared to the other clusters, specifically reaching 7.45, while the highest value is achieved by Finland, followed by Denmark. This cluster has the highest average net income as well as GDP per capita among the clusters formed, which is typical for the countries in this cluster. The Gini coefficient, with an average value of 27.9, indicates the second lowest income inequality. It is also characterized by the best values of the risk of poverty and unemployment rates. The number of tertiary graduates in this group of countries is rather ambiguous. There is Luxembourg, with the lowest number of 21.2 per 1 000 inhabitants in the whole Europe, but also Denmark with 104.8, which ranks it among the countries with the highest number of graduates. The average number of immigrants of this cluster is comparable to the other clusters, despite the inclusion of Germany, which significantly exceeds all other European countries in terms of the number of immigrants.

The second cluster covers the economically developed Western countries, which include France, Belgium, the United Kingdom and Ireland, but also includes Malta. The countries show above-average values of net income, GDP, and well-being. They also have low values for the risk of poverty rate, the unemployment rate, and the Gini coefficient. In terms of the immigrant indicator, Malta and Ireland have significantly lower numbers than the other countries in this group.

The third cluster includes Romania, Greece, Bulgaria and, after 2017, Lithuania, Latvia and Croatia. The cluster is characterized by the largest income inequalities, with Bulgaria leading with above-average values. Furthermore, these countries have the lowest net income and GDP values. The high risk of poverty rate is also specific. Paradoxically, the unemployment rate here is not significantly higher than in other countries in Europe. The exception is Greece, which, at 19.3%, is above the cluster average. All this is reflected in well-being, which in these countries reaches the expected low point of 5.73 on average.

In the fourth cluster, mainly Central European countries are represented. These include Slovenia, Slovakia, Poland, the Czech Republic, Portugal, and Hungary. A common feature of these countries is the lowest income inequality within the countries considered. Well-being is average, but higher than in cluster 3. Both the risk of poverty rate and the unemployment rate are quite low. Although they are close to the countries in the second cluster in terms of net income, Hungary and Slovakia have the lowest net incomes, while Slovenia has the highest. GDP per capita decreased on average in 2018 compared to the previous year, bringing it closer to the third cluster. Low immigration numbers are also a common feature, with Poland being the exception, with a significantly higher number of 214 083.

The fifth cluster is the smallest of the clusters and consists of Italy, Cyprus, Spain, and Estonia. This cluster is characterized by relatively low well-being values in the countries compared to the others. It is also well characterized by relatively low incomes, GDP per capita, and greater income inequality. The average unemployment rate in these countries is around 9.1%, with the exception of Spain, which has 15.3%. The risk of poverty rates are higher than in the other clusters, with the highest rates being in the third cluster. In the case of immigrants, these countries differ considerably from each other. Cyprus and Estonia show low numbers, while Italy and Spain show significantly high numbers.

The average well-being values for 2018 are summarized in Table 2. For most of the clusters, they increased slightly year-on-year. The exception is the fourth cluster, where the average value decreased in 2018 compared to the previous year. This decrease is likely due to the inclusion of Portugal and Hungary, which were previously in the first cluster, and the values of 5.93 and 5.91 reduce the cluster average. In addition, the value of average net income also fell, making it lower than the average net income in cluster five. A similar situation in an upward direction occurred for the average value of the GDP per capita. In addition, the average value in cluster five increased considerably, presumably due to three countries moving from cluster five to cluster three, which paradoxically increased the average GDP per capita in cluster three by the inclusion of Lithuania, Latvia, and Croatia. There were no other significant differences in development between the clusters.

Table 2: Characteristics of the individual clusters

Cluster	1	2	3	4	5
Well-being	6.349	6.248	5.734	6.933	7.451
Gini coefficient	31.600	26.200	34.900	29.060	27.900
Net income	15 907	11 616	8 891	19 479	23 302
Risk of poverty rate	25.400	17.500	29.800	20.100	17.600
Unemployment rate	9.900	4.800	8.500	5.700	5.010
Number of tertiary graduates	71	72	67	97	70
Number of immigrants	254 249	73 635	64 579	250 576	182 174
GDP per capita	27 225	23 733	20 033	37 340	44 322

Source: Own survey.

In each year of the analysis, five clusters were formed, which are characterized by the same features in all three years and also consist of almost identical countries. It is possible to conclude that the clusters are relatively stable on a temporal basis. A final assessment of the five clusters based on the 2018 data can characterize the clusters as follows:

- The first cluster is a group of Southern European countries, which tend to be less developed countries, with higher unemployment rates, risk of poverty rates and income inequality.
- The second cluster is essentially made up of Central European countries, which are characterized by the most equal income distribution and also by low risk of poverty rates.

- The third cluster includes countries that may be considered to have even lower economic levels than those of the countries in the first cluster.
- The fourth cluster comprises economically advanced countries with above-average GDP.
- The fifth cluster also includes economically advanced countries. It may be argued that it includes the most advanced of those considered, which are primarily characterized by high economic levels and high incomes.

The outcome of the cluster analysis determined that the higher the net income and the lower the risk of poverty, the higher the well-being is in the countries, and vice versa. A regression analysis was then used to test this hypothesis.

Regression analysis

The models were constructed using the descending elimination method, whereby one starts with a model including all the explanatory variables considered and makes changes in the model based on a stepwise reduction of the insignificant variables. A p-value is used to examine their statistical significance. All of the models fulfilled all of the assumptions of a classical linear regression model.

Net income and the risk of poverty rate were identified as significant in all three of the examined years (see Table 3), to the detriment of the other factors considered, i.e., their significance crowded out the significance of the remaining factors. The optimal models including these factors explain 77.47% for 2016, 75.61% for 2017 and 78.78% of the variability in well-being for 2018. Based on these values of the coefficients of determination, it is possible to conclude that net income and the risk of poverty rate may appropriately determine the well-being of the population in the selected countries. This model is primarily designed to establish a good estimate close to the empirical value of the well-being of European countries.

Table 3: Summary of the estimated parameters of the created models

Variable	2016	2017	2018
Const	8.4162	8.7027	7.8250
Net income	0.000073	0.000067	0.000083
Logarithm of risk of poverty rates	-1.0166	-1.0541	-0.8402

Source: Own survey.

For all three of the developed models, the expected positive relationship between net income and well-being, and the negative relationship between the poverty risk rate and well-being were confirmed. For the parameters, there is an agreement between the expected signs based on theoretical assumptions and the signs in the constructed model.

Table 3 shows that net income would have to increase by €10,000 for well-being to increase by at least 0.8267 of its unit in 2018. Such an increase

in income is very large and unrealistic. Nevertheless, the factor is undoubtedly significant and has an impact on well-being. With a 1 p. p. increase in the risk of poverty rate, well-being would decrease by 0.008402 in 2018. Such an increase or decrease in the risk of poverty rate is quite common. Between the given years, the risk of poverty rates varied by more than 1 p. p. across the countries. The magnitude of the change in well-being may seem irrelevant, but this is not the case given the small scale on which its values move.

DISCUSSION

Five natural homogeneous clusters were obtained by applying a cluster analysis in each of the three years analyzed, based on indicators of well-being, net income and the risk of poverty rate. The first cluster represents mostly rather less developed countries, the second cluster consists of the Central European countries with the lowest Gini coefficient values, the third cluster contains the least developed of the studied countries, and the fourth and fifth clusters include economically developed countries, while the fifth cluster includes slightly more developed countries than the fourth. In addition, the fifth cluster has the highest average well-being. The results of the cluster analysis showed that the highest levels of well-being are found in the most developed Northern and Western European countries, namely Switzerland, Norway, Luxembourg, Sweden, Finland, the Netherlands, Denmark, and Austria. On the contrary, the levels of well-being are the lowest in the less developed countries, namely Romania, Greece, and Bulgaria, which were joined by Lithuania, Latvia, and Croatia in the last year of the analysis, i.e., 2018.

The results of the study further indicate a strong functional relationship between well-being and two variables, namely net income and the risk of poverty rate. In the case of net income, the findings are consistent with the research of Caporale et al. (2009), Stutzer (2004) and Haushofer and Fehr (2014). It may be argued that despite differences in terms of the period under study, the data sources, the methods used, and the sample of countries, the assumed conclusions are similar. The signs of the net income parameters obtained through the regression analysis performed are positive in all three of the analyzed years. This shows a clear positive relationship between net income and well-being. The relationship between the two variables was already shown to be strong in the correlation analysis, which is in line with the result of the analysis of Stutzer (2004). This author proposes that well-being depends more on the size of the gap between the desire for a certain income and the actual income. However, this gap is smaller for people with higher income, which explains the positive correlation between income and well-being. Although Easterlin (1974) argues that at a certain level of income the relationship between income and well-being ceases to be strong, later research has strongly rejected this argument (Haushofer and Fehr, 2014; Degutis et al., 2010). Net income values also increased slightly over the

period analyzed in this study, and the correlation between average net income and well-being did not decrease over time. On the contrary, it increased a little, which would also imply that evidence for the Easterlin paradox is not found here. Of course, the period under consideration is too short to make such conclusions.

Caporale et al. (2009) add that it is also important to analyze the relationship between income inequality and well-being. In this context, they looked at the reference income, discovering a negative effect of income inequality in developed countries and, conversely, a positive effect in Eastern European countries. For the analyses in this study, income inequality was represented in the form of a Gini coefficient, as in the studies by Kelley and Evans (2017) and Hajdu and Hajdu (2014). The aforementioned negative relationship was shown in the form of decreasing values of the Gini coefficient depending on well-being. Nevertheless, the Gini coefficient was eventually excluded from the models based on its large p-value of t-test, indicating that its effect on well-being was not significant.

This conclusion is in some form also reflected in the study by Kelley and Evans (2017), where they argue that in advanced economies income inequality on average neither helps nor hurts levels of well-being, and is thereby irrelevant. They justify this with the idea that, rather than comparing with the rich, what matters is the state of structural and existential security and safety, whereas objective standards are not so clear and certain in developing countries. This is also consistent with Festinger's (1954) formulation of social comparison theory. Therefore, in developing countries this indicator may appear to be significant, even with a paradoxically positive effect on well-being, and in more developed countries, such as those in Europe, it loses its significance. The positive effect may be due to Zagorski's (1994) so-called hope factor. The results of Hajdu and Hajdu (2014), as well as this paper, provide a similar perspective on the issue regarding the insignificance of income inequality; however, their findings of the insignificance of income inequality only apply to economically developed countries, differentiating the maturity of Western and Eastern European countries. For Eastern European countries, they found a strong negative effect of income inequality.

As for the second significant variable, the risk of poverty rate, a linear-logarithmic functional form was included in the model to represent the relationship. The resulting inferred relationship between the risk of poverty rate and well-being is negative. This conclusion is consistent with claims based on the results of Haushofer and Fehr (2014) or Molotsky and Handa (2020) of a causal negative relationship between poverty and well-being. But here it is important to draw attention to the fact that the approaches used to reach their conclusions are completely different from the approach in this study. Both of the aforementioned studies dealt with the impact of poverty based on data obtained from an experiment of money transfers to a random sample of people in extremely poor countries.

Although the log GDP per capita variable eventually dropped out of the optimal model due to its non-significance, the correlation analysis revealed a correlation coefficient between log GDP per capita and well-being with a

value of 0.8 in all three models, indicating a strong positive dependence. In addition, a t-test with a two-sided p-value of less than 5% showed the significance of this correlation coefficient in all three years. The conclusion of this paper on the relationship between GDP and well-being ultimately leans more towards the views of authors such as Stevenson and Wolfers (2008), Degutis et al. (2010) and Di Tella et al. (2003), whose research has shown this relationship to be significant and consider it important. This would confirm the theory that growth affects overall life satisfaction, which according to Degutis et al. (2010) leads to positive views on democracy, governmental economies, and market economies.

In the case of the regression analysis in this study, the non-significance of GDP may have been due to the presence of other variables in the analysis which, by their greater significance, pushed it out of the model. When testing the logarithm of GDP per capita as the only variable, the variable is significant and explains 65.6% of the variability of the well-being data. Stevenson and Wolfers (2008) found that economic development increases individual income unequally. Therefore, their analysis considers the relationship between well-being and the logarithm of GDP per capita, instead of a linear form. The same approach is followed in this study. In some cases, the lack of evidence of a clear linear relationship between GDP and well-being has led to theories of a "saturation point" beyond which an increase in income no longer increases happiness, and to subsequent conclusions about the unproven relationship between GDP and well-being in developed countries. Degutis et al. (2010) add that the observed relationship is not related to a country's well-being, as implied by the research of Easterlin (1974) or Kenny (2005).

According to Nikolova and Graham (2014) and Knabe and Rätzel (2010), there is a negative relationship between unemployment and well-being. However, the correlation and regression analyses carried out reached a different conclusion. The correlation matrix did not show any relationship between the two variables. In constructing the optimal models using the OLS method, the unemployment rate indicator as an explanatory variable was eliminated due to its insignificance. The resulting insignificance is consistent with the results of Knabe et al. (2010) and Dolan et al. (2017). Knabe et al. (2010) reported that employed people are more satisfied with their life, but on the other hand, there is a certain offsetting effect of the unemployed with respect to leisure time. Dolan et al. (2017) add that although well-being is related to unemployment, the relationship is considerably weak.

The regression analysis for the variable number of tertiary graduates also led to the null hypothesis of its insignificance not being rejected. This conclusion contradicts most studies that found either a positive relationship between education and well-being (Blanchflower and Oswald, 2004; Powdthavee et al., 2015) or a negative one (Dockery, 2010). However, the result is consistent with Kristoffersen's (2018) judgment of a neutral effect of education. It should be noted, however, that the different studies worked with models with different treatments of education, which, among other effects, may have prompted the heterogeneity of the obtained results. According to Kristoffersen (2018), the education effect operates indirectly, through an

individual's expectations. Powdthavee et al. (2015) presented evidence that the effect of education on well-being is indirect and occurs through mediating variables such as economic circumstances and health. Kristoffersen (2018) argues the neutral effect of education by reasoning that with perfect predictability and no asymmetric information, education is not expected to have any effect on well-being. One person may pursue an education because they aspire to a higher standard of living and creates higher expectations. Another person may not pursue an education and thus has lower expectations. If both achieve what they expect, they will, *ceteris paribus*, be equally satisfied.

Based on the regression analysis, the number of immigrants also has no impact on the well-being of residents in the countries. A significant relationship between the two variables was also not revealed by the correlation analysis, so it is pointless to consider the direction of the relationship, as is concluded by Polgreen and Simpson (2011). There is very little research in this area and, moreover, analysing it is quite challenging and limited by, for example, the lack of available data.

According to Hoang and Knabe (2021), the differences in the different research already lie in the very concept of well-being. The authors use data from questionnaire surveys, and most of the time well-being is analyzed in the form of Cantril's ladder, which is also applied by GWP. On the other hand, as already mentioned, some authors used data from other well-being indicators in their studies, or they established their own scales, such as Dolan et al. (2017), who analyzed the 6 key steps to well-being along with well-being using Cantril's ladder. Furthermore, Kelley and Evans (2017) analyzed the mean of a 10-scale satisfaction question and a 4-scale happiness question from the WVS-EVS as the explanatory variable, and alternatively, satisfaction separately as the explanatory variable. The substantive conclusions of this research are the same in both cases. The study shows a correlation between happiness and satisfaction. Also, the study by Di Tella et al. (2003) agrees with the aforementioned correlation, from which Degutis et al. (2010) concludes that whichever indicator representing well-being is used, the long-term trend remains similar, so that ultimately does not matter so much which indicator is used, which contradicts the view of Hoang and Knabe (2021). Nevertheless, there are many limitations in using the well-being indicator. For example, research has revealed that most people's well-being tends to fluctuate around a certain point, and there are also difficulties in determining cause and effect. Therefore, caution is needed when drawing firm conclusions and this should be considered (Thomas and Evans, 2010).

CONCLUSIONS

This article focuses on the issue of well-being of the population in selected European countries. On the basis of several studies, seven factors were suggested, which were expected to have a certain impact on the variable to

be explained, i.e. the level of well-being of the population. The analysis was carried out for the years 2016–2018. Using the cluster analysis, five natural homogeneous clusters were obtained in each of the three years, analyzed based on the indicators of well-being, net income and the risk of poverty rate. The multiple regression analysis examining the functional relationship between the selected relevant indicators as explanatory variables, and well-being as an explanatory variable, yielded an optimal model for each of the years studied.

The regression analysis led to the finding that the factors that affect well-being include net income with a linear partial functional form and the risk of poverty rate with a lin-log functional form. In the resulting model, only explanatory variables related to an individual's income and its magnitude remained. This supported the assumption of the importance of absolute income size on an individual's subjective assessment of life satisfaction.

The given issue is undeniably a complicated and extensive topic; therefore, the results of this paper may be enriched with additional findings in the future. More detailed research could focus on developed and less developed countries separately. Alternatively, the results of the empirical analysis could be extended to other indicators, such as indicators of population structure or economic freedom of the population.

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