IS THE HETEROGENEITY
OF THE EU MEASURABLE?

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Abstract

Can we visually measure and present how heterogeneous and different has become the EU at the different stages of its development? Can we create something like the „EU's heterogeneity index", or is it more appropriate just to talk about an „attempt to measure EU heterogeneity"? Surely such an attempt, if succeeded, would contribute substantially to the debates on the future of the EU, making them more thorough, professional and comprehensive. In recent years, we have witnessed the creation of numerous indexes, many of which are trying to measure difficult or even impossible at first glance values such as happiness, life satisfaction, human development. Such an attempt would be entirely in line with this trend and its aim should be to present a real picture of the EU's changes in recent decades, as well as to make predictions about its development in the future. In the best of the cases, it could also find the approximate value after which the EU is no longer a sustainable and viable political project.

Key words: EU, heterogeneity, index, measurability

Heterogeneity, diversity, mixedness, inequality... One could go on a lot with the synonyms of the most obvious and visible characteristic of the EU in its current state, but the most important thing in this case is not just to certify an obvious fact, but to try to make an attempt to measure it or demonstrate it visually. The task is too ambitious and difficult, which is why we should not even call such an attempt an „index of EU heterogeneity", but rather simply an „attempt to measure EU heterogeneity", but if we still use the term „index" in the present paper, it should be understood largely under condition.

First of all, can we measure at all such a phenomenon or similar characteristic of an organization? Certainly, the issue is controversial and interesting, but

since in recent years we have seen the creation of numerous indices for various phenomena, many of which try to measure difficult or even impossible at first glance values such as happiness[1], life satisfaction[2], overall human development[3] etc., we believe we are entitled to such experience. It would be entirely in tune with the trend of creating various indices in recent decades. Examples of this are numerous, and here specifically for the EU we can also recall the catch-up index[4], referring to the catch-up processes between the individual EU member states, grouped in cluster-like entities.

Apart from the general tendency to create indices for different social, political and other phenomena, the arguments in favor of such an experience lie mostly in the overall political, academic and expert debate, which in recent years has been oriented towards the heterogeneity, diversity and heterogeneity of the EU as the main factor in finding suitable formulas and opportunities for its development. Surely such an experience would contribute immensely to making this debate more thorough, professional and comprehensive, while providing new tools for how the EU should be governed in the future. The closest to the idea that we want to develop and present here is perhaps an already created index of heterogeneity, but it concerns only the individual countries in the EU and their attitude to the EU integration processes. To this we can add the fact that there is no known index or attempt to measure EU heterogeneity in its entirety in the scientific literature, while the EU is referred to itself, i.e. to compare different stages of its development. Quite naturally, there are various indices[5], or rather comparisons, which aim to make visible the differences and similarities between the EU and other similar organizations, but they are also incomplete, not least because of the **sui generis** character of the EU. In general, however, the various characteristics of the EU, positive or negative, are difficult to measure with quantitative indicators.[6]

The motivation and the need to create an index that tries to visually represent the degree of heterogeneity of the EU would be very useful in getting an overall idea of its state, as well as an argument in making analyzes of its state. Moreover, its main idea is that the individual indicators should be balanced between the variable and non-variable characteristics of the EU, so that it simultaneously reflects both its stable base and the different characteristics of its development, which in turn give an idea of the degree of this heterogeneity in every one moment.

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[1] Home | The World Happiness Report

[2] OECD Better Life Index

[3] Human Development Index | Human Development Reports (undp.org)

[4] The Catch Up Index - thecatchupindex.eu

[5] König, Jörg and Ohr, Renate; „The European Union - a heterogeneous community? Implication of an index measuring European Integration", Department of Economics, Georg-August-Universität Göttingen, June 2012

[6] ibid.

Our aim is to find the most accurate quantifier of change both after each successive enlargement of the EU and to make a direct comparison between the original version of the 6-nation EU and its state now. The aim is also to get a real idea of the change of the EU, as well as to make predictions about its development in the future, ideally the approximate value of such an index could be found, after which the EU is no longer sustainable and vital political project. Here the debate can also develop around how accurate the value in question should be, as in our opinion it should hardly be found given the high degree of political subjectivity and motivation in each subsequent enlargement.

It should be clearly emphasized that the idea and the name of the index, namely that it reflects the degree of heterogeneity of the EU, should in no way suggest that we present heterogeneity necessarily as something positive or that we can allow the speculative idea of its decay. The different values of this attempted index do not mean that the EU cannot become more homogenous again (or that we should not strive for it) and are not intended to point in just one direction. Quite the opposite – as with all indicators, or at least those that reflect variable components, they will be able, figuratively speaking, to move in both directions and thus reflect the current state of heterogeneity in the EU.

The great challenge when attempting such a measurement comes from several directions – first of all, what exactly should be the individual components (indicators, values...) through which to represent the heterogeneity of the EU? Theoretically, they are endless – the heterogeneity of the EU has numerous dimensions (political, economic, legal, value, demographic, geopolitical, etc.) and each of them can accordingly be represented by numerous separate indicators. Following the geometric progression effect, we can easily calculate that the sum of indicators can be of the order of several tens. Next, not all indicators can find values that are convenient for presentation or comparison, for example, it is difficult to compare numbers with percentages. In compiling such an index, it is assumed that its individual indicators can be compared with each other, as well as easily reflect changes. It should also not be forgotten that there are many indicators for which it is difficult to find data for past periods of the EU's development given our desire to track the increase in heterogeneity at any point in its development. In other words, we will try to adhere to the two main characteristics of the indicators that we mentioned, namely **relatability** and **measurability**. It is difficult and too subjective to determine the specific number of indicators, as it should be large enough to be able to reliably represent the heterogeneity of the EU, and at the same time small enough to have a certain operability and visibility.

In the next table we represent the exemplary indicators that could serve for measuring the EU heterogeneity. However, the final indicators that we selected to be included in the index are given further in table N 2. The table below present just the potential ones, confirming once again the list is far from exhaustive and could be prolonged.

Table N 1. Potential exemplary indicators for measuring EU heterogeneity

Indicator	Essence / Motivation	Remarks / Comments
The ratio between the percentages of added territory and population and the percentages of reduced purchasing power	The ratio between the percentages of added territory and population during the next expansion, respectively the percentages of decrease in the average income, measured in purchasing power parity (PPP), is calculated.	An indicator that would well show the contradiction between increased quantity at the expense of reduced quality as a standard of living. The shortcomings - it is mainly a static indicator, showing the problems at the time of enlargement, but not enough in view of the dynamic development.
Correlation between the main policies of the EU (EEC) at the time of its creation and the current moment - based on the Treaties.	The indicator measures the relationship between the main policies of the EU at the time of its creation and its current state.	This is mainly a functional indicator, as the heterogeneity of the EU is also due to many new added and developed policies. The difficulties come both from finding a stable base and from defining the policies themselves.
The difference between the averages of the three richest and the three poorest countries in PPS	The present just the richest and the poorest country can be not enough representative and therefore more countries could be included.	This potential indicator does'not differ substantially from those with one country/one region, but however the increased accuracy and representativeness should be taken into account.
The difference between the averages of the three richest and the three poorest regions in PPS. They could be more than three, given the great number of regions in EU.	The same argument like for the above indicator could be enumerated.	The same like above.
Degree of economic and financial interdependence between individual member countries	Percentages or absolute values of intra-Community trade, investment or financial flows between individual member countries to demonstrate the degree of heterogeneity.	The great difficulty with this indicator is the determination of the exact values of the economic interdependence between the member countries - trade, finance, investments, percentage of high added value in exports. Also, values can be taken for individual countries, but it is difficult to translate this into an EU-wide value.

First of all, the individual indicators in the index should reflect the main heterogeneity factors of the EU, which we believe are the **economy**, **value identity** and **geopolitics**. Why exactly these factors are the subject of another and very extensive research, which is not the subject of the present work, and here we will content ourselves with listing a few other main factors that reflect the increased heterogeneity of the EU in question. Among other things, two of these factors (without the value identity) can be relatively easily converted into specific values, respectively indicators, to be tracked over time. Understandably, another, no less important question follows, namely, what values we can and should choose to reflect and quantify these factors. For example, the economy can be represented by dozens of types of values, each of which can claim to adequately represent the heterogeneity of the EU. However, guided by the mentioned principle that the entire index should be maximally operational and neat, it is obvious that we will have to limit ourselves to a reasonable number of values. Moreover, before and during the first years of the admission of the new member states from the former Eastern Bloc, it was believed that it was the economy that was the main factor of heterogeneity in the EU, but this has changed in recent years, both because of the relatively successful process of economic equalization and because of the severe value gaps between the western and eastern parts of the continent.

To the factors of heterogeneity already developed in detail, we will add one main **horizontal indicator** that cannot be missed, namely the increase in the number of member states. The motivation for the inclusion of this basic indicator hardly needs in-depth analysis and evidence – the increase in the number of EU members presupposes everything that follows, and in this sense it can be said that this indicator is indisputable. Seemingly purely mechanical, the increased number of states presupposes other fundamental changes such as decision-making and the achievement of consensus. This underlying indicator should be a kind of support for the whole index – it has not direct link to the individual heterogeneity factors, but is a major prerequisite for this, namely the number of countries or, more precisely, their dynamics. The number of countries in different stages of EU enlargements relative to the basic number of 6 countries will be the first indicator.

Also, in order to trace the change of heterogeneity from the very beginning of the European integration, we believe that it is necessary to establish a stable basis against which to calculate the degree of heterogeneity both in the individual stages of the development of the EU, as well as its present and future condition. In view of history, the most appropriate platform for this is undoubtedly the prototype of the EU - the three communities created at the end of the 1950s, namely ECSC, EUROATOM and EEC, and here we are mainly interested in the profile of the six founding countries, and namely the three Benelux countries, Germany, France and Italy. Regardless of the different thematic scope of the three communities, their founding countries are the same and, moreover, they were relatively homogeneous in economic, value, geopolitical and every other sense. Certainly, there were economic differences

between the individual countries then, and not small ones, but for us in this case the political, ideological, geostrategic and generally historical arguments are predominant. In addition, the differences at that time, to the extent that they existed, were mainly in terms of the economy and much less in the other factors of heterogeneity – the value system and geopolitics, the population of these countries also had a high degree of consciousness of belonging to the main European values, as well as they all unquestionably belong to the same geopolitical region. In other words, we can tentatively accept these six countries, if not as one, then at least as a prototype and a successful platform on which to develop the measurement of EU heterogeneity. In other words, we conditionally assume that for this „purely Western European project", as Günther Verheugen calls it[7], the value is constant and constant, i.e. that the differences between them were minimal or rather negligible. As already mentioned, we will not look for and reflect the degree of heterogeneity at the time, as this would greatly complicate the construction of the index.

The determination of the following indicators (except for the one on the value system) at first glance seems easy, since there are clearly defined factors to which the individual indicators should be adapted. For economics, it has already been mentioned that data is abundant there due to its very nature, mostly related to various quantitative ratios. On the other hand, however, this also entails risks due to the large selection of possible indicators, and here the assessment should be primarily analytical as to which indicators are most adequate in this case. In economics, there is indeed a large set (and choice) of indicators that can reflect heterogeneity relatively objectively. As is well known, the indicator that is most often used in discussions about the admission of new member countries is the gross product per capita, measured in the indicator PPP – Purchasing Power Parity. It measures the total and individual wealth of individual nations and is used in all the main economic measurements concerning the development of the EU and the allocation of funds from the cohesion and structural funds. Thus, the first indicator in the field of economics will represent the difference between the highest and lowest value (in EURO) of PPP in two Member States, respectively as the richest and the poorest. These countries may be different at different times, but the indicator should remain unchanged. In addition, and for greater accuracy, the second indicator on the economy will be similar, but instead of a ratio between countries, it will represent the ratio between the richest and poorest regions in the EU. After the creation and gradual improvement of the European regional policy of the EU, the ratio between poverty and wealth of the regions has also become one of the main economic indicators for its development.

Undoubtedly, the most difficult point in the attempt to measure the heterogeneity of the EU is to define an indicator that would reflect the blurring

[7] Verheugen, Günther; „Europa in crisis. For a re-establishment of the European Idea", Kiepenheuer&Witch, 2006, Original title: „Europa in der Krise. Fьr eine Neubegrьndung der europдischen Idee", 78

of the EU's value system. Belonging to a different (sub)culture, the different understandings, traditions, mores and feelings that are directly projected both in the state administration and in the socio-political landscape is really difficult to measure and there are very few reliable indicators that can serve as basis in this direction. The reliable valuation of the value system is indeed a great challenge for all researchers, but in our case it is imperative to try to overcome it. The well-known division of cultural models by the Dutch sociologist Trompenaars[8], supplemented by his colleague Hofstede[9], as well as by their Bulgarian colleague Minkov,[10] although is interesting and original, is practically inapplicable in our case - first of all, it concerns only models of doing business, and does not refer to overall management or development of the public sector or of international organizations in particular, moreover, its scope is much larger and concerns the models in the USA, China and other continents. Also, Trompenaars' model has virtually no application or valuation to individual European countries, as it does not count them among its separate cultural models, nor does it make any reference to the EU as a whole or to its individual regions.

Another option for finding an indicator for measuring European values could be the attitude towards corruption, measured by the attitude towards it in various sociological surveys, as well as by the perception of corruption, which is traditionally measured by the organization Transparency International.[11] Undoubtedly, the phenomenon of corruption and the perception of it is one of the main problems related to the dilution of the value system, which in addition steadily increases its values from West to East and from North to South. However, it is not the only indicator of (non)belonging to European values, and it would not be possible to measure the questionable blurring of the EU's value system, one of the main factors of heterogeneity, only through the attitude towards it. In this situation, the possible solution that we can offer is similar to the comparison in economics with the comparison of the two (most) extreme values. In this case, however, what is important is exactly what indicator will be chosen, is it adequate to measure the value system, and can reliable data be found for current and past values? The numerous surveys of public opinion in Europe, carried out by the European sociological-analytical service Eurobarometer, allow us to find the answer to the question of what percentage of residents in individual countries (do not) express their belonging to European values or what percentage of them consider themselves European or not. Accordingly, convert the difference between the highest and the lowest percentage into an indicator to put in the „indicator values" column. When defining this indicator, we are fully aware of

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[8] Trompenaars, Fons, „Riding the Waves of Culture", London, The Economist Books, 1993

[9] Hofstede, Geert, „Riding the waves of the commerce: A test of Trompenaars' „model" of national cultural differences", Institute for Research on Intercultural Cooperation, Maastricht and Tilburg, Netherlands, 1996

[10] Minkov, Mihail, „Why are we different?", original title in Bulgarian: „Защо сме различни?", изд. „Класика и стил", София, 2007

[11] Home - Transparency.org

its high relativity, but on the other hand, it is absolutely necessary to include it in the overall assessment of the heterogeneity of the EU. This is also important from another point of view - belonging or not to European values is not necessarily tied either to the wealth of a given nation, or to whether the country is a founding member of the EU or joined at a later stage. Despite the difficulties with defining an indicator when measuring the value system, it is relatively easy to give a reliable indicator that reflects the geopolitical diversity in the EU - the distinction of geopolitical sub-regions in the EU is relatively clear and stable over time and can help to reflect of the heterogeneity of the EU. Each geopolitical sub-region, regardless of how economically developed it is, brings different and often unpredictable problems to the EU, concerning subsequent border areas, stretched external borders, possible border disputes with nearby countries, etc.

The individual indicators representing the whole experience of creating an EU heterogeneity index can be summarized in the following table:

Table N 2. Measurement of EU heterogeneity - main indicators

Indicator	Substance	Explanation / Motivation
Base of measurement - unity	The EU in its original form - the EEC, composed of the 6 founding countries (Belgium, the Netherlands, Luxembourg (Benelux), France, Germany and Italy) represents a conditional unit 1.0, or we assume that its heterogeneity is reduced to the greatest possible minimum. 1.0 is actually the six countries combined, but in reality the total base value is 5.0, as we assume a value of 1.0 for each of the five indicators.	Certainly there were differences between the 6 founding countries then, if we also take into account the presence of the relatively undeveloped Italian South, but we conditionally assume that the differences are minimal, besides everything else the EU was not created by a single country that could be taken as a model, but of 6, which we take as a whole.
Indicator 1 Number of countries	The change in the number of countries in percentages or times compared to the original 6.	An indisputable main indicator of the increased heterogeneity in the EU, which must be included.
Indicator 2 Economy - greatest disparity state PPS	The difference in times between the richest and the poorest EU member state, measured as an average of the two countries in Purchasing Power Parity (PPS).	The European Statistical Office Eurostat should be used as a source.
Indicator 3 Economy - Greatest disparity PPS regions	The difference in times between the poorest and richest regions within the EU, measured in Purchasing Power Parity (PPS) averaged across all regions.	The European Statistical Office Eurostat should be used as a source.

Indicator 4 System of values	The difference between the highest and the lowest positive response to the question: „Do you feel belonging to the European value system?"	As mentioned, this is one of the most difficult indicators to formulate. As a reference, however, we think that it is most logical to take the values from studies related to European value affiliation. The Eurobarometer will be used as a source.
Indicator 5 Geopolitics	The increased number of geopolitical sub-regions within the EU	The classification of geopolitical sub-regions follows the logic of the enlargements of the European Union (see below)

Table N 3. The heterogeneity in EC after the first round of enlargement in 1973

Initial value		Changes in indicators		Remarks / Comments
Indicator 1 Number of countries - **1**		(new) Number of countries - **1,5**		General number after the enlargement (9) compared to the initial number (6) **9 / 6 = 1,5**
Indicator 2 - economy (countries) **1**	Initial general value **5**	Greatest difference in PPS (countries) **2,3**	General value after the 1973 enlargement **11,21**	According to OECD data the highest values for a country was Luxembourg - 7 269.3 USD and the lowest - Ireland 3 147 USD. The proportion was **2,30**
Indicator 3 - economy (regions) **1**		Greatest difference PPS (regions) **4,1**		The poorest region in the enlarged EC in 1973 was nord-western Ireland with a value approximately 1 500 USD and the richest is London with a value approximately 6 217 USD. The proportion is **4,1**
Indicator 4 - system of values **1**		Greatest difference system of values **1,31**		Due to the lack of data on belonging to the European idea, in this indicator, the maximum difference from the results of the referendums on EU membership of the individual (new) countries is taken as a reference. This is the difference between the result in Ireland - the highest (83.1%) and Denmark - the lowest (63.3%)
Indicator 5 - geopolitical regions**1**		Number of geopolitical regions **2,0**		1 geopolitical region (NW Europe) is added, regardless of the fact that 1 country outside it (Denmark) joins, as well as the fact that the UK subsequently leaves the EU.

Table N 4. Current value of the EU heterogeneity (Index of heterogeneity) - 2022

		Changes in indicators		Remarks / Comments
Indicator 1 Number of countries - **1**		Number of countries - **4,5**		General number of EU current member-states (27) compared to the initial number (6) **27 / 6 = 4,5**
Indicator 2 - economy (countries) **1**	Initial general value **5**	Greatest difference in PPS (countries) **5,14**	General current value of hetero-geneity **24,6**	Luxembourg - Bulgaria, values of PPS 79 300 / 15 400 The proportion is **5,14**
Indicator 3 - economy (regions) **1**		Greatest difference PPS (regions) **6,06**		Richest Region - Brussels / Poorest - Nord-western Bulgaria values in PPS 61 300 / 10 100 The proportion is **6,06**
Indicator 4 - system of values **1**		Greatest difference system of values **1,9**		The largest difference in responses on the question „Do you feel an appurtenance to the European values?" - Hungary (76%), France (40%)[12]
Indicator 5 - geopolitical regions **1**		Number of geopolitical regions **7,0**		Currently we fix the number of EU geopolitical regions of **7**[13].

As a conclusion, we are firmly convinced that such of indicator should exist and be developed in the future. The difficulties in its elaboration are linked first and utmost with the selection of indicators and the impossibility to find equal data for every one period of its existence.

Nevertheless and despite under conditions, we tried to establish and present it. The heterogeneity of the European Union became its main feature in the last decades and it has to be deeply explored and researched. The establishment of such an index beyond any doubts belongs to this exploration and development of the European political sciences and will contribute to the development and deepening of the academic and political debate for the future of EU.

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[12] Special Eurobarometer 508: Values and identities of EU citizens - Data Europa EU

[13] The division we use follows strictly the logic of the EU enlargements, namely we accept the first 6 countries as one (1) region, adding a new region(s) for every one subsequent enlargement, in general 6, namely: Nord-West Europe / Mediterranean / Scandinavian / Baltic / Visegrad / Balkans. The few exceptions of countries joining the EU outside „their" region like Cyprus or Austria do not change the general picture.

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