The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

Katarzyna Cegiełka[1], Piotr Dniestrzański[2], Arkadiusz Maciuk[3], Maciej Szczeciński[4]

Abstract:

Purpose: The paper aims at simulating the composition of the European Parliament (EP) after possible impending enlargements of the European Union. To this end, a number of scenarios are considered to this end including the accession of the four countries with current candidate status and the three countries which applied for admission to the Community as of March 2022.

Approach/Methodology/Design: The analyzed simulations of EP composition were developed using the methods most frequently proposed in the literature, i.e. the parabolic method, the base+prop method and r-DP methods. These methods allocate the seats in concordance with the condition of degressive proportionality.

Findings: All the scenarios of the EU enlargement discussed imply an increased total EP representation of the group of countries with low income in terms of GDP per capita, hence their role in the EP increases. This result complies with the idea of the harmonious development of European countries based on cooperation as promoted by the Community.

Practical Implications: Eight different scenarios of possible enlargements of the European Union were applied to determine the divisions of seats in the European Parliament. These simulations can underlie the choice of a concrete method of finding the allocation of mandates as an alternative to the current practice of determining the composition of seats by negotiations. Grouping states according to GDP per capita makes it possible to compare the methods employed in the context of their influence on the total quantity of the representation of countries with different levels of affluence.

Originality/Value: The added value of this paper is the comparison of results from selected methods in view of possible enlargements of the Community. In particular, it turns out that the base+prop method is the most "neutral" for the countries with the highest GDP per capita, as in the case of Ukraine's accession.

Keywords: Allocation of seats, European Parliament, European Union, welfarez.

JEL Codes: D39, E01.
Paper Type: A research study.

---

[1]*Wroclaw University of Economics and Business, Wrocław, Poland,* *katarzyna.cegielka@ue.wroc.pl;*
[2]*The same as in 1, piotr.dniestrzanski@ue.wroc.pl;*
[3]*The same as in 1, arkadiusz.maciuk@ue.wroc.pl;*
[4]*The same as in 1, maciej.szczecinski@ue.wroc.pl;*

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

146

1. Introduction

The history of parliamentary representation formation contains cases when the composition of collegial bodies undergoes significant changes related to the increased number of those entitled to be represented. This happened, for instance, when the United States House of Representatives was increased after new states were admitted to the Union. The territory of the country increased and new local structures were emerging which had to gain representation in the national administration. As a consequence, the total number of seats increased, and allocation rules were modified.

A similar process has been occurring recently in Europe. The European Coal and Steel Community was created as a small structure of six states, it evolved and became the European Union (EU), now including twenty-seven member states. Although the United Kingdom withdrew from the Union at the beginning of 2020, countries from south-eastern Europe and, since March of 2022, from eastern Europe declare their willingness to join this organisation. The accession process itself involves several stages and its result is never assured. Many legal and economic criteria are required to be satisfied by candidates, the process is conditioned by political decisions and can be blocked by the disapproval of just one member state (see Section 2).

Naturally, as EU structures develop, there is a need to form representation which is capable of making decisions in the name of all its members. One such structure is the European Parliament (EP) whose shape and basic principles of functioning are set by the article 9A(2) of the Lisbon Treaty from 2007. It proclaims: "*The European Parliament shall be composed of representatives of the Union's citizens. They shall not exceed seven hundred and fifty in number, plus the President. Representation of citizens shall be degressively proportional, with a minimum threshold of six members per Member State. No Member State shall be allocated more than ninety-six seats*".

Thereby the maximum number of total representatives $(h = 751)$, as well as the minimum $(m = 6)$ and maximum $(M = 96)$ numbers of delegates representing individual member states were established. The article also imposed the principle of degressive proportionality to represent citizens from individual member states, which was specifically formulated in (Lamassoure and Severin, 2007) as a conjunction of the following conditions:

if $p_1 \leq p_2 \leq \cdots \leq p_n$ then $m = s_1 \leq s_2 \leq \cdots \leq s_n = M$ (monotonicity), (1)

if $p_1 \leq p_2 \leq \cdots \leq p_n$ then $\frac{s_1}{p_1} \geq \frac{s_2}{p_2} \geq \ldots \geq \frac{s_n}{p_n}$ (degression), $\qquad$ (2)

where $p_1, p_2, \ldots, p_n$ and $s_1, s_2, \ldots, s_n$, respectively, are the numbers of citizens and the numbers of allocated parliamentary representation of individual countries.

Article 9A(2) of the Lisbon Treaty constitutes the first legal normalisation of a principle known as the degressive proportionality rule. In a sense, it is a compromise between respecting entitlements as determined by the population of division participants, and recognizing the interests of Community members with smaller populations to be allocated a worthwhile parliamentary representation. The principle of degressive proportionality perceived in this way admits various allocation rules, thus leading to many potential proposals of allocation methods.

The literature on the subject includes both proposed methods dealing with division of seats in the European Parliament [for example: (Pukelsheim, 2007; Ramírez-González, 2007; Martínez-Aroza and Ramírez-González, 2008; Słomczyński and Życzkowski, 2010; Pukelsheim, 2010; Słomczyński and Życzkowski, 2010; Grimmett *et al.,* 2011; Florek, 2012; Ramírez-González *et al.,* 2012; Słomczyński and Życzkowski, 2012; Łyko and Rudek, 2013; Dniestrzański and Łyko, 2014; Łyko and Rudek, 2017; Cegiełka *et al.,* 2019), as well as theoretical analyses to be applied regardless of what type of goods are divided (Słomczyński and Życzkowski, 2012; Cegiełka and Łyko, 2014; Haman, 2017; Dniestrzański and Łyko, 2020; Cegiełka *et al.,* 2021a; Cegiełka *et al.,* 2021b.

The discussion around indicating a single rule to form the composition of the European Parliament has been ongoing for more than fifteen years. The best-known proposal is the so-called Cambridge Compromise (Grimmett *et al.,* 2011). Other solutions to the problem (Ramírez-González, 2007; Martínez-Aroza and Ramírez-González, 2008; Słomczyński and Życzkowski, 2012; Grimmettet *et al.,* 2017), although very interesting both as regards theory and practice, were not considered by the EU organs in further formal proceeding. In spite of those endeavours, the composition of the European Parliament is still decided by negotiations, the same way as before the Treaty of Lisbon was adopted, contrary to countless declarations to give up this practice. In addition, many times the adopted solutions did not meet the criteria previously agreed by politicians as regards establishing the composition of the European Parliament (Horubski *et al.,* 2017; Łyko and Łyko, 2020).

The problem becomes especially significant when member states exit EU structures or new states are included. Changes in the composition of the Community have always resulted in changes in the composition of the European Parliament and thereby negotiations were conducted whose effect could only be predicted. The number of representatives of individual countries was thus uncertain until a relevant document was published by the European Parliament Committee on Constitutional Affairs.

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

148

Therefore, forecasting the political system of power in the whole assembly has been difficult, especially in the context of changes in the composition of the Community. With no clear-cut rules, solutions preserving the status quo are preferred. For example, when working to establish the composition of the ninth term, i.e. with Brexit in prospect, it was decided that out of 73 seats vacated by the UK, 46 seats were to be allocated for possible EU enlargement and 27 seats to be shared out among 14 under-represented EU countries, to make possible a demand that the numbers of representatives of individual countries differ to their disadvantage by at most 1, versus the allotment in the previous term (Hübner and Pereira, 2018).

The foregoing practice of EU enlargements demonstrates that speculations about which candidate country will eventually be admitted are highly uncertain. With this fact in mind, we consider in this paper several possible scenarios of EU enlargement, and the impact of such enlargements on the number of EP seats due to individual countries, using three different methods of allocation compliant with the conditions of the Lisbon Treaty (see Section 3). These scenarios consider, in addition to the countries already recognized as candidates for membership of the European Union, the countries which applied for membership in March 2022, i.e., Georgia, Moldova and Ukraine. An assumption was also made that the maximum number of seats would likely be distributed.

Following this assumption does not significantly change the numbers of the EP representatives of existing EU members if current candidate countries or relatively low-populated countries are admitted. However, the co-option of Ukraine will bring an obvious downward adjustment for a significant number of countries, whereas the size of the adjustment depends both on the enlargement scenario and on the chosen method of allocation (see Section 5).

One of the consequences of the potential enlargement of the EU will be the greater impact of less affluent countries on decisions made by the Union's institutions, because all currently recognized candidate countries (as well as current applicants to become candidates) have income (GDP per capita) lower than the major part of current EU member states. A structure analysis of EP representation of countries with diverse wealth is consequently doable (see Section 4).

2. Review of Accessions after 1993

The legal foundation for European countries willing to accede to the Community is set out in two articles of the Treaty on European Union (TEU). Article 2 outlines the values underlying the Community, whereas Article 49 defines a path that must be followed by applicant states and conditions they have to fulfil.

Article 2: The Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. These values are common to the Member

States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail.

Article 49: Any European State which respects the values referred to in Article 2 and is committed to promoting them may apply to become a member of the Union. The European Parliament and national Parliaments shall be notified of this application. The applicant State shall address its application to the Council, which shall act unanimously after consulting the Commission and after receiving the consent of the European Parliament, which shall act by a majority of its component members. The conditions of eligibility agreed upon by the European Council shall be taken into account.

The conditions of admission and the adjustments to the Treaties on which the Union is founded, which such admission entails, shall be the subject of an agreement between the Member States and the applicant State. This agreement shall be submitted for ratification by all the contracting States in accordance with their respective constitutional requirements.

The conditions required to be fulfilled by candidate states were specified in the Union's eligibility criteria, the so-called Copenhagen criteria, which were laid down by the European Council at the Copenhagen summit in 1993. The first criterion deals with the stability of institutions which guarantee democracy, the rule of law, human rights, respect for and protection of minorities. The second criterion is the existence of a functioning market economy and the capacity to cope with competitive pressure and market forces within the EU. The third, concluding criterion calls for the ability to take on the obligations of membership, including the capability to efficiently implement principles, norms and policies of the Union (*acquis communautaire*) as well as adherence to the aims of the political, economic and monetary union.

The EU accession procedure usually follows five steps. Step one includes the submittal of an application. A European country meeting the conditions stipulated in Article 2 of the TEU submits a formal application to the European Council, which reports the fact of submitting the application to the European Commission and national parliaments of member states. In step two the European Commission submits an opinion on the application after consultations with the Council of the European Union. In step 3 the applicant country is granted a candidate status. The decision is made unanimously by the Council of the European Union after obtaining the opinion of the European Commission and approval of the European Council.

Step four is opened by the unanimous decision of the Council of the EU that is followed by negotiations during conferences held by governments of the EU member states and the candidate country. The final step includes formalities related to Community accession. Once the process of negotiations is finalised, an accession treaty is prepared in the course of conferences of all EU member states. This treaty must be unanimously approved, first by the Council of the EU and then by the EP.

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

150

Before taking effect, the accession treaty must be ratified by each member state of the EU and by the candidate country in compliance with their respective constitutional procedures. When the European Union formally came into being in 1993, sixteen states joined the Community. In 1995 the Community was expanded to include three new member states – Austria, Sweden and Finland. In 2004, an enlargement with ten new members took place, including eight countries from the former so-called Eastern Block, joined by Cyprus and Malta. This enlargement was completed by the accession of Bulgaria and Romania in 2007, with Croatia accepted in 2013 as the last member.

The time of the entire process measured from submittal of the application to the accession was significantly diverse in the analysed enlargements. The shortest time, less than three years, was taken by Finland to join the Community. The country submitted its application in 1992 and became a member in 1995. The longest accession process, spanning almost 14 years, was in the case of Malta and Cyprus. These countries submitted their applications in 1990 to become members in 2004. Similarly, Bulgaria and Romania applied in 1995 to join the Union in 2007. Apart from the process duration, accession to the EU is quite complex and can be stopped at any time. In other words, submittal of an application does not mean that accession is already certain. Turkey, for instance, submitted an application in 1987, but the accession process, in the negotiations phase, is still under way. Table 1 presents all accessions after 1993. In each case, the date of application and the date of accession to the Union are given.

Table 1. Accession dates chronologically

Year of enlargement	No.	Country	Submission date	Accession date
1995	1	Austria	1989-07-17	1995-01-01
	2	Sweden	1991-07-01	1995-01-01
	3	Finland	1992-03-18	1995-01-01
2004	4	Cyprus	1990-07-03	2004-05-01
	5	Malta	1990-07-16	2004-05-01
	6	Hungary	1994-03-31	2004-05-01
	7	Poland	1994-04-05	2004-05-01
	8	Slovakia	1995-06-27	2004-05-01
	9	Latvia	1995-09-13	2004-05-01
	10	Estonia	1995-11-24	2004-05-01
	11	Lithuania	1995-12-08	2004-05-01
	12	Czechia	1996-01-17	2004-05-01
	13	Slovenia	1996-06-10	2004-05-01
2007	14	Romania	1995-06-22	2007-01-01
	15	Bulgaria	1995-12-14	2007-01-01
2013	16	Croatia	2003-02-21	2013-07-01

Source: Own elaboration based on data from "European Neighbourhood Policy and Enlargement Negotiations".

3. Simulating Distribution of Seats in the EP

One of the major EU institutions is its legislative organ, i.e., the European Parliament. While functioning, its size oscillates between 78 and 766 representatives (Information Guide European Parliament, 2015). Each enlargement of the European Union results in necessary decision on the composition of the European Parliament. Since a concept of degressive proportionality was introduced into the Lisbon Treaty, there have been endeavors to determine a universal method of allocating seats in the European Parliament among the member states.

The Members of Parliament themselves acknowledged that an "*ideal alternative would be to agree on an undisputed mathematical formula of 'degressive proportionality' that would ensure a solution not only for the present revision but for future enlargements or modifications due to demographic changes*" (Lamassoure and Severin, 2007), but hitherto no decision has been made to accept one of many solutions proposed in the literature.

The forthcoming compositions of the EP will probably be determined by negotiations of member states as well. Nevertheless, so as to present actual allocations in this paper, we apply the methods that are most frequently proposed in the literature. In the description of each one of them we use the following notation. The total number of seats to be allocated is denoted by h, whereas m and M denote the smallest and the greatest number of seats available to one member state respectively. The number of member states is denoted by n, and the population of the ith member country – by p_i. The sequence of populations is ordered as nondecreasing, i.e. $p_i \leq p_{i+1}$ holds for every $i \in \{1, 2, \ldots, n-1\}$. In the first two methods we apply rounding to the closest integer denoted by $[\cdot]$, and in the last one – the ceil function denoted by $\lceil \cdot \rceil$.

The first method, i.e., *parabolic method*, was proposed in Ramírez-González (2007) and Martínez-Aroza and Ramírez-González (2008). A quadratic function of the form $A(p) = ap^2 + bp + c$ is applied. To allocate the seats, such real numbers a, b, c are to be found, for which $A(p_1) = m$, $A(p_n) = M$ and $\sum_{i=1}^{n} [A(p_i)] = h$ hold. This method is one of the earliest methods proposed in the literature of the EP composition that satisfies the requirement of degressive proportionality. The Members of Parliament themselves regarded it as "*one of the most degressive*" methods (Gualtieri and Trzaskowski, 2013).

The next method is the *base+prop method* (Słomczyński and Życzkowski, 2012); the Cambridge Compromise is its special case. It consists in allocating a certain, constant number of seats, called a base, to each country, and then in distributing the remainder of seats proportionally to populations. This method applies the function $A(p) = \min\left\{m + \frac{p - p_1}{d}, M\right\}$, where the parameter d is selected in such a way that

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

152

$A(p_1) = m$, $[A(p_n)] = M$ and $\sum_{i=1}^{n}[A(p_i)] = h$ hold. An indisputable advantage of this method is its transparency and simplicity.

The last method employed in this paper is one case from the family of methods called *r-DP methods*. It was proposed in Grimmett *et al.* (2017). It is based on the

function $A(p) = \frac{hr\sqrt{p}}{\sum_{i=1}^{n}\sqrt{p_i}} + \frac{h(1-r)p}{\sum_{i=1}^{n}p_i}$, where r is called a degression coefficient.

The authors put forward $r = 0.5$ and this value was also employed in this paper. Next, the parameter k is taken in such a way that $\sum_{i=1}^{n} \text{median}\{6, [kA(p_i)], 96\} = h$ holds.

Allocations determined by the above rules are presented in Tables 2, 3 and 4, respectively. The Tables also present the composition of seats in the Parliament of the 9th term after Brexit. In case of all allocations, $h = 751$ was assumed, i.e., the maximum available number of seats in compliance with the Treaty of Lisbon, and the size of the chamber in the 8th and 9th term before Brexit, as well. This number was reduced to 705 as a consequence of Brexit, subject to saving vacated 46 seats towards prospective enlargements (Hübner and Pereira, 2018). Data on populations were sourced from Eurostat (as of 1 January 2021), apart from Moldova and Georgia, whose population data were taken from the National Bureau of Statistics of the Republic Moldova and the National Statistics Office of Georgia, respectively.

Table 2. Simulations of divisions of seats with parabolic method

Country	2020	Population	A	B	C	D	E	F	G	H
Malta	6	516 100	6	6	6	6	6	6	6	6
Montenegro		620 739	6	6	6	6	6	6	6	6
Luxembourg	6	634 730	6	6	6	6	6	6	6	6
Cyprus	6	896 005	7	7	7	6	7	6	6	6
Estonia	7	1 330 068	7	7	7	7	7	7	7	7
Latvia	8	1 893 223	8	8	8	8	8	8	8	8
North Macedonia		2 068 888	8	8	8	8	8	8	8	8
Slovenia	8	2 108 977	8	8	8	8	8	8	8	8
Moldova		2 589 107			9		9		8	8
Lithuania	11	2 795 680	9	9	9	9	9	9	9	9
Albania		2 829 741	9	9	9	9	9	9	9	9
Georgia		3 728 573		11			10	10		10
Croatia	12	4 036 355	11	11	11	10	11	10	10	10
Ireland	13	5 006 907	13	12	12	12	12	11	11	11
Slovakia	14	5 459 781	13	13	13	12	13	12	12	12
Finland	14	5 533 793	13	13	13	12	13	12	12	12
Denmark	14	5 840 045	14	14	14	13	13	12	12	12
Serbia		6 871 547	15	15	15	14	15	13	13	13
Bulgaria	17	6 916 548	15	15	15	14	15	14	14	13

Austria	19	8 932 664	18	18	18	16	18	16	16	16
Hungary	21	9 730 772	20	19	19	17	19	17	17	16
Portugal	21	10 298 252	20	20	20	18	19	17	17	17
Sweden	21	10 379 295	20	20	20	18	19	18	18	17
Greece	21	10 682 547	21	20	20	18	20	18	18	18
Czechia	21	10 701 777	21	20	20	18	20	18	18	18
Belgium	21	11 566 041	22	22	22	19	21	19	19	18
Netherlands	29	17 475 415	30	29	29	26	29	26	26	25
Romania	33	19 186 201	33	32	32	28	31	28	28	27
Poland	52	37 840 001	55	54	54	50	53	48	49	48
Ukraine		41 418 717				54		52	53	52
Spain	59	47 394 223	66	64	65	60	63	59	59	58
Italy	76	59 257 566	77	76	76	72	75	72	72	71
France	79	67 439 599	84	83	84	81	83	80	80	80
Germany	96	83 155 031	96	96	96	96	96	96	96	96
	705		751	751	751	751	751	751	751	751

Source: *Own study.*

Table 3. *Simulations of divisions of seats with base+prop method*

Country	2020	Population	A	B	C	D	E	F	G	H
Malta	6	516 100	6	6	6	6	6	6	6	6
Montenegro		620 739	6	6	6	6	6	6	6	6
Luxembourg	6	634 730	6	6	6	6	6	6	6	6
Cyprus	6	896 005	7	6	6	6	6	6	6	6
Estonia	7	1 330 068	7	7	7	7	7	7	7	7
Latvia	8	1 893 223	8	8	8	8	8	8	8	8
North Macedonia		2 068 888	8	8	8	8	8	8	8	8
Slovenia	8	2 108 977	8	8	8	8	8	8	8	8
Moldova		2 589 107			9		9		8	8
Lithuania	11	2 795 680	9	9	9	9	9	9	9	9
Albania		2 829 741	9	9	9	9	9	9	9	9
Georgia		3 728 573		10			10	10		10
Croatia	12	4 036 355	11	11	11	10	10	10	10	10
Ireland	13	5 006 907	12	12	12	11	12	11	11	11
Slovakia	14	5 459 781	13	12	12	12	12	12	12	12
Finland	14	5 533 793	13	12	12	12	12	12	12	12
Denmark	14	5 840 045	13	13	13	12	13	12	12	12
Serbia		6 871 547	14	14	14	13	14	13	13	13
Bulgaria	17	6 916 548	14	14	14	13	14	13	13	13
Austria	19	8 932 664	17	17	17	16	17	16	16	15
Hungary	21	9 730 772	18	18	18	17	18	16	17	16
Portugal	21	10 298 252	19	19	19	17	18	17	17	17
Sweden	21	10 379 295	19	19	19	17	19	17	17	17
Greece	21	10 682 547	19	19	19	18	19	18	18	17
Czechia	21	10 701 777	19	19	19	18	19	18	18	17
Belgium	21	11 566 041	21	20	20	19	20	19	19	18

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

154

Netherlands	29	17 475 415	28	28	28	26	27	25	25	25
Romania	33	19 186 201	31	30	30	28	30	27	27	27
Poland	52	37 840 001	55	54	54	50	53	49	49	48
Ukraine		41 418 717				54		53	53	52
Spain	59	47 394 223	68	67	67	61	65	59	60	59
Italy	76	59 257 566	83	82	82	74	80	73	73	72
France	79	67 439 599	94	92	93	84	91	82	82	81
Germany	96	83 155 031	96	96	96	96	96	96	96	96
	705		751	751	751	751	751	751	751	751

Source: *Own study.*

Table 4. *Simulations of divisions of seats with r-DP method*

Country	2020	Population	A	B	C	D	E	F	G	H
Malta	6	516 100	6	6	6	6	6	6	6	6
Montenegro		620 739	6	6	6	6	6	6	6	6
Luxembourg	6	634 730	6	6	6	6	6	6	6	6
Cyprus	6	896 005	6	6	6	6	6	6	6	6
Estonia	7	1 330 068	6	6	6	6	6	6	6	6
Latvia	8	1 893 223	7	7	7	7	7	6	6	6
North Macedonia		2 068 888	7	7	7	7	7	7	7	7
Slovenia	8	2 108 977	7	7	7	7	7	7	7	7
Moldova		2 589 107			8		8		8	8
Lithuania	11	2 795 680	8	9	9	8	9	8	8	8
Albania		2 829 741	8	9	9	8	9	8	8	8
Georgia		3 728 573		11			10	10		9
Croatia	12	4 036 355	11	11	11	10	11	10	10	10
Ireland	13	5 006 907	12	13	13	12	12	12	12	11
Slovakia	14	5 459 781	13	13	13	13	13	12	12	12
Finland	14	5 533 793	13	13	13	13	13	12	12	12
Denmark	14	5 840 045	14	14	14	13	14	13	13	13
Serbia		6 871 547	15	16	16	15	15	14	14	14
Bulgaria	17	6 916 548	15	16	16	15	15	14	14	14
Austria	19	8 932 664	18	18	19	17	18	17	17	17
Hungary	21	9 730 772	20	20	20	18	19	18	18	18
Portugal	21	10 298 252	20	20	20	19	20	19	19	18
Sweden	21	10 379 295	20	20	21	19	20	19	19	19
Greece	21	10 682 547	21	21	21	20	20	19	19	19
Czechia	21	10 701 777	21	21	21	20	20	19	19	19
Belgium	21	11 566 041	22	22	22	21	22	20	20	20
Netherlands	29	17 475 415	30	30	30	28	29	27	27	27
Romania	33	19 186 201	32	32	32	30	31	29	29	29
Poland	52	37 840 001	55	53	53	49	53	49	49	48
Ukraine		41 418 717				53		53	53	52
Spain	59	47 394 223	67	63	63	59	63	58	59	58
Italy	76	59 257 566	80	75	76	70	76	70	71	69
France	79	67 439 599	89	84	84	78	84	78	78	77

Germany	96	83 155 031	96	96	96	92	96	93	93	92
	705		751	751	751	751	751	751	751	751

Source: *Own study.*

Each Table considers scenarios of enlarging the Union by the following groups of states: A – states with a candidate status (Albania, Montenegro, Northern Macedonia, Serbia); B – A plus Georgia; C – A plus Moldova; D – A plus Ukraine; E – A plus Georgia and Moldova; F – A plus Georgia and Ukraine; G – A plus Moldova and Ukraine; H – A plus Georgia, Moldova and Ukraine. Likewise, the scenarios are indicated in Table 5.

Table 5. *Percentage share of groups of countries in all seats following different scenarios*

	A	B	C	D	E	F	G	H
	Parabolic method							
I class	29.69	30.63	30.36	34.22	31.42	34.89	34.89	35.55
II category	39.41	38.75	39.01	36.75	38.35	36.35	36.35	36.09
III group	30.89	30.63	30.63	29.03	30.63	28.76	28.76	28.36
	base+prop method							
I class	28.63	29.56	29.43	33.95	30.49	34.75	34.62	35.42
II category	41.41	40.75	40.88	37.42	39.95	36.75	36.88	36.35
III group	29.96	29.69	29.69	28.63	29.56	28.50	28.50	28.23
	r+DP method							
I class	29.03	30.76	30.36	34.48	31.03	35.02	34.75	35.69
II category	40.21	38.35	38.48	36.09	38.35	35.82	36.09	35.42
III group	30.76	30.89	31.16	29.43	30.62	29.16	29.16	28.89

Note: *A – countries with a candidate status (Albania, Montenegro, Northern Macedonia, Serbia); B – A extended by Georgia; C – A extended by Moldova; D – A extended by Ukraine; E – A extended by Georgia and Moldova, F – A extended by Georgia and Ukraine; G – A extended by Moldova and Ukraine, H – A extended by Georgia, Moldova and Ukraine.*
Source: *Own study.*

4. Effect of Enlargements on the Structure of Parliamentary Representation in the Context of Income (GDP Per Capita)

One of the consequences of Brexit is the statistical effect of a reduced mean income (GDP per capita) of Community residents. In particular, the representation of countries with the smallest GDP per capita increased. The enlargements of the Community discussed in the paper include the countries where GDP per capita is smaller than in the considerable majority of current EU members. This means that each accession under study results in an increased proportion of countries with the lowest GDP per capita in the European Parliament. The extent of these changes depending on particular enlargements is analysed in this section.

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

156

Before Brexit, states belonging to the first tercile of the EU countries with respect to GDP per capita (i.e., one third of countries with the lowest GDP per capita) were represented by 23.99% of seats in the EP. After Brexit, this percentage increased to 26.81%. The United Kingdom was located in the second tercile as regards GDP per capita, thus, due to Brexit, the percentage of seats in the European Parliament allocated to countries from the second tercile declined from 44.36% to 40.14%. On the other hand, the representation of countries from the third tercile (i.e. the third of countries with the greatest GDP per capita) increased from 31.65% to 33.05% of seats because of Brexit.

In the following analysis, the countries were divided into three groups regarding GDP per capita as of 2021 (according to the International Monetary Fund). Group one includes the countries with GDP per capita not exceeding 22 9222 USD (the first tercile for the EU 2022), Group two is formed by countries with GDP per capita between 22 9222 USD and 47 447 USD (second tercile), and group three contains the countries with GDP per capita exceeding 47 447 USD (third tercile).

Table 5 presents the percentage representation of countries in the European Parliament as regards the respective groups and possible variants of EU enlargement.

As one may see in Table 5, extending the European Union by all four candidates increases the EP representation of countries from group one. It is worth noting as well that irrespective of the division method, the greatest increase of representation of countries from this group follows the variants of enlarging the European Union by Ukraine. The representation exceeds 33% of seats exclusively for those countries (while only the base+prop method and the variant of only Ukraine joining would lead to the representation of group one countries with slightly less than 34%).

This is a consequence of the fact that the population of Ukraine is similar to the populations of the largest EU countries. Combined with one of the smallest GDP per capitas in Europe, the representation of countries with the smallest GDP per capita would significantly increase. Moreover, the allocation obtained by the parabolic method for scenario A would result in a decreased percentage of EP representation of countries from group one.

In case of countries from group two, the increase of their representation in the European Parliament is possible only with the A, B and C variants of EU enlargement. Group two gets the most seats under scenario E, when its joint representation is proportionally greatest (more than 38% of seats). Each of the analysed enlargements results in a reduced EP representation of countries from group three.

However, one can note that these changes are smaller with the base+prop method compared to other methods. Hence, the scenarios assuming the accession of Ukraine

(the most advantageous for countries from group one) would be closest to scenarios without Ukraine for countries from group three if the base+prop method was used. Moreover, in case of this method, group three countries see no difference between variant F (enlargement by all candidates, Ukraine and Georgia) and variant G (enlargement by all candidates, Ukraine and Moldova). However, variant F is more advantageous for group one countries, while variant G is better for group two.

5. Conclusions

The consequence of EU enlargements in all analysed scenarios is an increased share of seats in the European Parliament for the group of countries with the smallest GDP per capita, and hence an elevated importance of their role. This effect is especially noticeable with scenarios assuming the accession of Ukraine, which leads to the largest reduction in the number of seats in the European Parliament for countries with the greatest GDP per capita. Such was the result obtained by all applied methods, whereby allocations generated by the base+prop method are characterised by the smallest differences with respect to allocations calculated in scenarios without Ukraine.

One of the underlying assumptions of the European Union is facilitating the harmonious development of all member states based on cooperation, which particularly involves protecting the interests of low-income countries. In this context, scenarios assuming the accession of Ukraine best meet those terms. An increase in the importance of countries with the lowest GDP per capita is then most obvious. Nevertheless, each of the scenarios considered would result in an increased share in the European Parliament for the countries with the smallest GDP per capita. Thereby each of the potential enlargements would change the configuration of power in the European Parliament in favour of countries with the lowest income.

References:

Cegiełka, K., Dniestrzański, P., Łyko, J., Maciuk, A., Szczeciński, M. 2021a. A neutral core of degressively proportional allocations under lexicographic preferences of agents. Eurasian Economic Review, 11(4), 667-685.

Cegiełka, K., Dniestrzański, P., Łyko, J., Maciuk, A., Szczeciński, M. 2021b. Relative Entropy in Determining Degressive Proportional Allocations, Entropy, 23(7), 903.

Cegiełka, K., Łyko, J. 2014. Application of Hamilton's and Divisor Methods to Degressively Proportional Allocation Functions. Procedia – Social and Behavioral Sciences, 110, 103-112.

Cegiełka, K., Łyko, J., Rudek, R. 2019. Beyond the Cambridge Compromise algorithm towards degressively proportional allocations. Operational Research, 19(2), 317-332.

Dniestrzański, P., Łyko, J. 2014. Influence of Boundary Conditions of Digressively Proportional Division on the Potential Application of Proportional Rules. Procedia – Social and Behavioral Sciences, 109, 722-729.

Dniestrzański, P., Łyko, J. 2020. Paradoxes of Degressively Proportional Allocations, In: Soliman K.S. (Ed.), Education Excellence and Innovation Management: A 2025

The Implications of Possible Enlargements of the European Union for the Configuration of Power in the European Parliament

158

Vision to Sustain Economic Development during Global Challenges, 6301-6306. International Business Information Management Association.

Florek, J. 2012. A numerical method to determine a degressive proportional distribution of seats in the European Parliament. Mathematical Social Sciences, 63(2), 121-129.

Grimmett, G., Laslier, J., Pukelsheim, F., Gonzalez, R., Rose, R., Słomczynski, W., Gonzalez, V.R. 2011. The allocation between the EU member states of the seats in the European Parliament Cambridge Compromise. Retrieved from: https://hal.archives-ouvertes.fr/hal-00609946.

Grimmett, G., Pukelsheim, F., Ramírez-González, V., Słomczyński, W., Życzkowski, K. 2017. The Composition of the European Parliament. Workshop, retrieved from: http://www.europarl.europa.eu/supporting-analyses.

Gualtieri, R., Trzaskowski, R. 2013. Report on the composition of the European Parliament with a view to the 2014 elections. Retrieved from: https://www.europarl.europa.eu/doceo/document/A-7-2013-0041_EN.html.

Haman, J. 2017. The Concept of Degressive and Progressive Proportionality and Its Normative and Descriptive Applications. Studies in Logic, Grammar and Rhetoric, 50(1), 67-91.

Horubski, K., Łyko, J., Rudek, R. 2017. The European Parliament: status quo vs. degressive proportionality. The European Proceedings of Social and Behavioural Sciences, 21(3), 23-33. The 4th International Conference on Political Science, International Relations and Sociology.

Hübner, D.M., Pereira, P.S. 2018. Report on the composition of the European Parliament. Retrieved from: https://www.europarl.europa.eu/doceo/document/A-8-2018-0007_EN.html.

Lamassoure, A., Severin, A. 2007. European Parliament resolution on proposal to amend the treaty provisions concerning the composition of the European Parliament (2007/2169(INI)). Retrieved from: https://www.europarl.europa.eu/doceo/document/A-6-2007-0351_EN.html.

Łyko, E., Łyko, J. 2020. The Composition of the European Parliament During the 2019-2024 Term in Light of Legal Provisions and the Rules of Fair Distribution. In: Bilgin, M. H., Danis, H., Demir E. (Eds.), Eurasian Economic Perspectives, Proceedings of the 26th and 27th Eurasia Business and Economics Society Conferences, 363-374, Cham, Springer.

Łyko, J., Rudek, R. 2013. A fast exact algorithm for the allocation of seats for the EU Parliament. Expert Systems with Applications, 40(13), 5284-5291.

Łyko, J., Rudek, R. 2017. Operations research methods in political decisions: a case study on the European Parliament composition. Computational and Mathematical Organization Theory, 23(4), 572-586. https://doi.org/10.1007/s10588-017-9243-7.

Martínez-Aroza, J., Ramírez-González, V. 2008. Several methods for degressively proportional allotments. A case study, Mathematical and Computer Modelling, 48(9-10), 1439-1445.

Pukelsheim, F. 2007. A Parliament of Degressive Representativeness? Preprint nr. 015/2007-23, Institut fur Mathematik, Augsburg. Retrieved from: http://www.math.uni-augsburg.de/forschung/preprint/.

Pukelsheim, F. 2010. Putting citizens first: Representation and power in the European Union. In: Cichocki, M., Życzkowski, K. (Eds.), Institutional Design and Voting Power in the European Union, 235-253. London, Ashgate Publishing Group.

Ramírez-González, V. 2007. Degressive proportionality. Composition of the European Parliament. The Parabolic method. In: Proceedings of the Workshop "Distribution of

power and voting procedures in the EU". Natolin, European Center, Warsaw.

Ramírez González, V., Martínez Aroza, J., Márquez García, A. 2012. Spline methods for degressive proportionality in the composition of the European Parliament. Mathematical Social Sciences, 63(2), 114-120.

Słomczyński, W., Życzkowski, K. 2012. Mathematical aspects of degressive proportionality, Mathematical Social Sciences, 63(2), 94-101.

Słomczyński, W., Życzkowski, K. 2010. Jagiellonian compromise – An alternative voting system for the council of the European Union. In: Institutional Design and Voting Power in the European Union, 43-58. London, Ashgate.

Public sources:

European Neighbourhood Policy and Enlargement Negotiations. Retrieved from European Commission website: https://ec.europa.eu/neighbourhood-enlargement/enlargement-policy/6-27-members_en.

Information Guide European Parliament, 2015. Retrieved from: http://aei.pitt.edu/74900/1/European_Parliament.pdf.