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ORIGINAL PAPER

Apportionment amongst Member States and the Value of a Vote in the 2014 European Parliamentary Elections

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Abstract

This quantitative analysis deals with the issue of the apportionment of seats in the European Parliament amongst the 28 Member States and its goal is to quantify the existing principle for allocating the EP seats, the so-called principle of degressive proportionality provided for in the first subparagraph of Article 14 (2) of the Treaty on European Union. The analysis employs quantitative tools commonly used in electoral analysis for measuring disproportionality of electoral rules (the discrepancy between seats and votes). At the individual (Member State) level, the paper finds both the value of a vote (the average size of population per seat) and how much each of the Member States overrepresented or underrepresented (by the advantage ratio measure). At the aggregate level for the whole European Parliament representation, the value of malapportionment is measured by the distortion index created by Loosemore and Hanby (1971), as it was earlier suggested as a suitable strategy for measuring malapportionment by Samuels and Snyder (1991).

Keywords: *European Parliament, Member States, representation, degressive proportionality, malapportionment, value of a vote*

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Introduction

The issue of direct elections to the European Parliament has attracted the attention of political scientists for many years. The possibility to introduce a uniform electoral system across the European Union member states has become one of the major topics of professional interest (see, e.g., Reif, 1984; Millar, 1990; Farrell, Scully, 2005; Charvát, Outlý, 2015). The idea of a single electoral system is enshrined in the founding treaties of 1957; The Treaty establishing the European Economic Community in Article 138, paragraph 3 entrusted the Assembly with the task of preparing a proposal for the introduction of direct elections of deputies of the Assembly, moreover, by the uniform election rules in all member states. The question of direct elections to the European Parliament has been very problematic and eventually was introduced in 1979. The issue of a uniform electoral system has been – and still is – so controversial that uniform election rules for the European Parliament elections do not yet exist. Provisional culmination of this process was the decision of the Council no. 2002/772/EC which amends the Act on direct elections from 1976. According to the Council decision of 2002, the European Parliamentary elections are held pursuant to a uniform principle that is the principle of proportional representation which has, however, appeared in 28 country-specific versions. Another common principle is that the European Parliamentary elections are held on the basis of equal, direct, secret and universal suffrage (see, e.g., Charvát, Outlý, 2015).

Of course, it could be argued that despite the political agreement on the principle of equality of the vote as one of the basic common principles of the European Parliamentary elections, the very mechanism of the distribution of seats in the European Parliament among the European Union member states, the so-called principle of degressive proportionality, is contrary to this principle since the elections of a deputy in a large European Union member state requires a much higher population than in a small European Union member state. The question of the apportionment of seats of Members of the European Parliament seats among the individual European Union member states is being paid little attention in contemporary political science research. A much greater interest in this subject can be captured rather with mathematicians (see, e.g., Cegielka, 2011; Dniestrzański, 2011; Florek, 2012; Grimmet, 2012; Kellermann, 2012; Słomczyński, Życzkowski, 2012; Serafini, 2012; Delgado-Márquez, Kaeding, Palomares, 2013).

Data and Strategy of Measuring Value of a Vote and Malapportionment

This quantitative analysis deals with the issue of the apportionment of seats in the European Parliament amongst the 28 European Union member states. The main objective of the study is to quantify the existing principle for allocating seats in the European Parliament, the so-called principle of degressive proportionality – as it is provided for in the first subparagraph of Article 14 (2) of the Treaty on European Union – in the 2014 European Parliamentary elections. The analysis presented here therefore employs two quantitative tools commonly used in election analysis for measuring disproportionality of electoral rules (the discrepancy between seats and votes): advantage ratio is used for measuring the degree of overrepresentation and underrepresentation of individual member states in the European Parliament (individual level); at the aggregate level, an adaptation of the original distortion index is employed as a strategy for measuring the degree of malapportionment (see below).

Data on the population of each European Union member state are necessary for such an analysis. Eurostat, a publicly available data archive, has been used as the source

of these data. Population figures have been determined in all cases on 1 January of the year in which the elections to the European Parliament took place. Therefore, if the apportionment of seats of Members of European Parliament is analysed in the 2014 European Parliamentary elections, it is based on the data on the size of the European Union member states population as well as the European Union as a whole from 1 January 2014.

For purposes of this analysis, the advantage ratio (A_i) is calculated as the ratio of the number of Members of the European Parliament allocated to a given member state i from the total number of Members of the European Parliament (s_i) divided by the proportion of the population of a given member state i from the European Union's total population (p_i).

$$A_i = \frac{s_i}{p_i}$$

When the value of advantage ratio equals to 1, it would imply that member state i occupies the same proportion of seats in the European Parliament as is its share of the total European Union population. If the values of advantage ratio index are lower than 1 it indicates underrepresentation of member state i; with the smaller a value is, the higher is the underrepresentation of the respective member state i. For example, when advantage ratio index equals to 0.75 it would mean that country i occupies only 75 per cent of seats compared to the situation that would have belonged to it in compliance with the principle of strict proportionality. Conversely, values of advantage ratio index that are greater than 1 mean the overrepresentation, i.e. that country i occupies a greater share of seats in the European Parliament than the equivalent of its share of the population in the total population of the European Union; the higher the value is, the greater is the overrepresentation of member state i. For example, if the advantage ratio index equals to 2.5 it would mean that the respective country i occupies 2.5 times more seats in the European Parliament than it would have in case of a pure proportional allocation of seats among the individual member states.

In all the elections it is virtually impossible for electoral areas to get an equal percentage of both, the population (or, the voters) and the seats contested. Malapportionment is used to indicate this discrepancy – that means to indicate unevenly or disproportionately defined constituencies when the constituencies are delimited regardless of the number of residents or voters, leading ultimately to the overrepresentation of some electoral regions. Such wards or regions therefore send to the representative body more elected representatives than would correspond to the shares of the population or voters from their total number. In single-member districts, the malapportionment manifests itself with the individual wards having a different number of voters. In multi-member districts, which is the case for the European Parliamentary elections, this feature is reflected by the fact that there is a higher number of voters per elected mandate in some wards than in other constituencies.

The avowed aim of malapportionment is to systematically favour certain groups (Lijphart, 1994: 15). This method is most often used in order to overrepresent less populated areas, or provide some form of bonus to parties that have the highest voter support in the overrepresented areas (Lijphart, 1999: 156; Gallagher, Mitchell, 2005: 634). However, as aptly put by a well-known political scientist and theorist of electoral systems Rein Taagepera, malapportionment is known, along with gerrymandering, as one of the

pathologies of electoral systems (Taagepera, Shugart, 1989: 17–18; Taagepera, 2008: 42–43), among others because it limits the degree of proportionality of election results – at least according to political scientist Michael Gallagher (see Gallagher, 1991: 44–45). Malapportionment simultaneously alludes to one of the fundamental principles of competitive elections (and the theories of democracy in general), namely the principle of equality of voting rights (or 'one person – one vote – one value principle') which is impossible to fill in to the greatest extent possible in case of there being uniformly defined constituencies. The higher the rate of malapportionment, the more an electoral practice moves away from its ideal of equality of votes.

David Samuels and Richard Snyder propose to use the well-known distortion index of John Loosemore and Victor Hanby (see Loosemore, Hanby, 1971) to measure malapportionment (Samuels, Snyder, 2001: 654–655; Charvát, 2011). The distortion index is commonly used to measure the allocation disproportionality of representative seats which is moreover similar to the malapportionment issue. While the original Loosemore-Hanby distortion index works with the shares of seats and votes in individual constituencies, for the purposes of this article it is adapted to the conditions of the European Parliamentary elections, respectively the apportionment of seats in the European Parliament among the European Union member states. The malapportionment rate (*MAL*) in relation to the representation of member countries in the European Parliament is therefore calculated so that the proportion of the number of deputies assigned to a given member state i from the total number of Members of the European Parliament (s_i) is subtracted from the proportion of the population of member state i from the European Union's total population (p_i). The values for each member country are converted to absolute values, and these absolute values for all European Union member states are added together. After the result of the addition is divided by two (so that the deviations are not counted twice), we obtain the value of malapportionment in the respective elections.

$$MAL = \frac{1}{2} \sum_{i=1}^{n} |s_i - p_i|$$

The malapportionment values move in a closed interval of <0; 1>. When the value of malapportionment equals 0 it would imply a purely proportional (equal) apportionment of seats in the European Parliament among the European Union member states (each European Union member country divided exactly that proportion of seats as had match the proportion of its population in the total population of the European Union). Conversely, if the value of malapportionment equals to 1, although the values of malapportionment never come close to it in the electoral practice, it would mean a maximum disproportion in the delimitation of constituencies with regard to the size of their population.

The resulting values are then easily interpretable and – in simple terms – indicate the percentage of the actual apportionment of seats among member states for the European Union as a whole deviating from the ideal uniform (proportional) apportionment of seats in the European Parliament. For example, if the value of malapportionment equals to 0.25 it would mean that 25 per cent of the total number of seats in the European Parliament was occupied in other countries than would correspond to the situation while respecting the principle of strict proportionality of seat allocation among the European Union member countries.

Results and Discussion

Under the Treaty on European Union, the total number of Members of the European Parliament (MEPs) cannot exceed the number of 750, and this number does not include the President of the European Parliament. There was an exception of a brief period from 2013 to 2014, when the European Parliament had temporarily 766 members after the accession of Croatia to the European Union. The number of Members of the European Parliament representing each European Union member state is then derived from the population size of a given member state according to the principle of degressive proportionality (see Article 14 (2) of the Treaty on European Union). Simultaneously, the Treaty of Lisbon provides for a minimum and maximum number of Members of the European Parliament elected in a single member state. Each member state of the European Union is thus entitled to a choice of at least six Members of the European Parliament. At the same time, it is true that any member state of the European Union shall not be allocated with more than 96 seats in the European Parliament. The demographically smallest European Union member states (Malta, Luxembourg, Cyprus and Estonia) thus receive the six seats, while the demographically largest country of the European Union, Germany, is distributed with 96 seats. Eight to seventy-four seats were divided among the remaining European Union member states in the 2014 European Parliamentary elections: 74 seats for France, 73 seats in the European Parliament having both the United Kingdom and Italy, 54 seats for Italy, 51 seats for Poland, 32 seats for Romania, less than 10 Members of European Parliament have even Latvia and Slovenia, both having 8 seats in the European Parliament (for more details see Table 1).

Table 1. The number of Members of the European Parliament of each European Union member state in the 2014 European Parliament elections

Member State	no. of MEPs	Member State	no. of MEPs
Germany	96	Austria	18
France	74	Bulgaria	17
United Kingdom	73	Denmark	13
Italy	73	Finland	13
Spain	54	Slovakia	13
Poland	51	Croatia	11
Romania	32	Ireland	11
Netherlands	26	Lithuania	11
Belgium	21	Latvia	8
Czech Republic	21	Slovenia	8
Hungary	21	Estonia	6
Portugal	21	Cyprus	6
Greece	21	Luxembourg	6
Sweden	20	Malta	6

The extreme values of each member state representation were, together with the principle of degressive proportionality, set deliberately with regard to significant variance between the number of inhabitants in the largest and smallest European Union member states. The degressive proportionality principle presupposes a certain level of benefit for

smaller member states when filling the Members of the European Parliament at the expense of large member states. A list of the most advantaged (overrepresented) smaller European Union member states and all the six disadvantaged (underrepresented) large European Union states is presented in Table 2. During the 2014 elections to the European Parliament, a total of 22 – out of 28 – European Union member states is favoured, while only the six demographically largest European Union countries (the French Republic, the United Kingdom of Great Britain and Northern Ireland, the Kingdom of Spain, the Federal Republic of Germany, the Italian Republic, and the Republic of Poland) are underrepresented in the European Parliament. Also Romania was slightly overrepresented in the 2014 European Parliamentary elections; Romanian advantage ratio equals to 1.0842 (that means about 8.5 per cent overrepresentation of Romania in the European Parliament compared to its population), and it was required more than 623 thousand Romanian inhabitants per one Romanian Member of the European Parliament, while the EU-28 average was about 675 thousand inhabitants per one European Parliament seat (see Table 2).

Table 2. Overrepresentation and underrepresentation of the European Union member states in the European Parliament since the 2014 European Parliament elections

Underrepresented			Overrepresented		
	A_i	ø inhabitants per mandate		A_i	ø inhabitants per mandate
France	0.7592	889,954.1757	Malta	9.5334	70,897.3333
UK	0.7670	880,935.0822	Luxembourg	7.3767	91,613.3333
Spain	0.7845	861,254.8148	Cyprus	4.7244	143,000.000
Germany	0.8030	841,458.3333	Estonia	3.0810	219,303.1667
Italy	0.8115	832,639.2877	Latvia	2.7008	250,183.5000
Poland	0.8960	754,816.8431	Slovenia	2.6224	257,635.6250
			Lithuania	2.5250	267,588.3636
			Croatia	1.7501	386,063.6364
			Slovakia	1.6218	416,611.4615
			Ireland	1.6144	418,548.0909
			(…) Czech Republic	*1.3497*	*500,591.3810*
			(…) Romania	*1.0842*	*623,207.0000*

Source: own calculations using data from Eurostat

The principle of degressive proportionality, however, necessarily entails discrimination against voters of the population of large European Union member states since they account for a significantly higher proportion of the population per seat in the European Parliament than in the case of demographically smaller countries. Table 2 clearly shows that while in the demographically largest countries, over 800 thousand inhabitants is necessary for one seat, the demographically smallest countries need 200 thousand inhabitants and less. Comparing the two extremes, France, the UK, Spain and Germany on the one hand need about twelve times more people per a Member of the European Parliament than Malta or Luxembourg needs on the other one. However, the European Parliamentary elections are thus in conflict with the basic democratic principle

of elections of the same value of all voters' votes. Simultaneously, Table 2 shows that the proportion of the larger in population the country, the higher is its underrepresentation does not apply. Germany, the largest in population, is in fact only the fourth most disadvantaged member country, while the most disadvantaged countries are represented by the second and third demographically largest European Union member states, namely France and the United Kingdom. Nevertheless, Table 2 reflects the malapportionment rate of individual member states in the European Parliament in 2014 only at the individual level, it does not tell us anything about the overall malapportionment rate in the 2014 European Parliamentary elections. As a useful tool for determining this value, and therefore to quantify the principle of degressive proportionality in the European Parliamentary elections in 2014, there is a procedure recommended by David Samuels and Richard Snyder (2001; see above). If we apply this calculation to the situation in the 2014 European Parliamentary elections, the value of the malapportionment adaptation of the original distortion index of Loosemore and Hanby equals to 0.1424. Thus, a total of 14.24 per cent of the seats in the European Parliament was distributed unevenly across the European Union member states in the 2014 European Parliamentary elections; or, in other words, 107 seats in the European Parliament were given to a different country in 2014 than would correspond to the principle of proportionality representation of the European Union member states (compared to their population shares).

Rather to illustrate, Figure 1 is given below comparing the malapportionment rate in each direct European Parliamentary elections from 1979 to the present. Along with the rise in the number of European Union member states, there is currently also an increase in the overall malapportionment rate in the European Parliament. It should be noted that the number of European Union member states is not the only variable that directly affects the malapportionment rate. These include the total number of Members of the European Parliament, the number of seats in the European Parliament allocated to individual European Union member states, the number of overrepresented and underrepresented countries, etc. But since the development of the malapportionment rate over time is not the aim of this study, this analysis will not address this issue further.

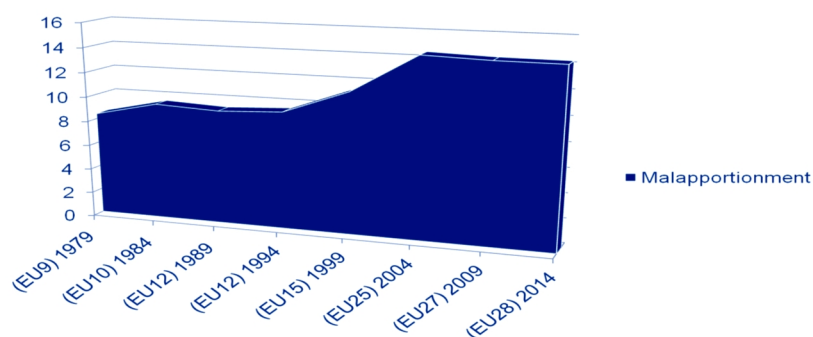**Figure 1. Malapportionment in the European Parliamentary elections since 1979**

Table 3 represents a model situation of the apportionment of seats in the European Parliament amongst the member states, should the same number of seats be divided as it was in the 2014 European Parliamentary elections (that means 751 seats) and simultaneously, if the seats for individual European Union member states were allocated

by the principle of strict proportionality in accordance with the proportion of their population. At the same time, this model calculation is compared with the situation in the 2014 European Parliamentary elections as well. Table 3 demonstrates that if the population equality were the criterion for apportionment in the 2014 European Parliamentary elections, then Germany would have to have 120 Members of the European Parliament (instead of 96 seats), France, the United Kingdom and Italy 90 or more Members of the European Parliament (instead of 74 or 73 seats, respectively). On the contrary, Malta, Luxembourg and Cyprus would have to have only one seat and Estonia two seats in the European Parliament (instead of six as guaranteed by the Treaty of Lisbon). In case of the criterion of the population equality was applied, Romania would have to have three Members of the European Parliament less than it was in 2014 (29 seats instead of 32).

Table 3. Representation of individual European Union member states in the European Parliament in case of proportional allocation of seats (with regard to the proportions of the population in European Union member states as of 1 January 2014)

Member State	no. of MEPs	Member State	no. of MEPs
Germany	120 (+ 24)	Austria	13 (- 5)
France	97 (+ 23)	Bulgaria	11 (- 6)
United Kingdom	95 (+ 22)	Denmark	8 (- 5)
Italy	90 (+ 17)	Finland	8 (- 5)
Spain	69 (+ 15)	Slovakia	8 (- 5)
Poland	57 (+ 6)	Ireland	7 (- 4)
Romania	29 (- 3)	Croatia	6 (- 5)
Netherlands	25 (- 1)	Lithuania	4 (- 7)
Belgium	17 (- 4)	Latvia	3 (- 5)
Czech Republic	16 (- 5)	Slovenia	3 (- 5)
Greece	16 (- 5)	Estonia	2 (- 4)
Hungary	15 (- 6)	Cyprus	1 (- 5)
Portugal	15 (- 6)	Luxembourg	1 (- 5)
Sweden	14 (- 6)	Malta	1 (- 5)

Source: our own calculations using data from Eurostat

Note: the number written in brackets indicates the difference between the number of Members of the European Parliament for a given member country in a strictly proportional allocation of seats among the European Union member states (see number before the brackets) and the current state of the number of Members of the European Parliament in the individual European Union member states (see Table 1). The value {+ 24} means that the country would have 24 more seats within the proportional allocation of seats than it had in the 2014 European Parliamentary elections. Or in other words, that the country was underrepresented by 24 parliamentary seats in the 2014 European Parliamentary elections. Conversely, the value {- 6} implies that, respecting the principle of strict allocation of

seats, a given country would be given six parliamentary seats less than it was in the 2014 European Parliamentary elections; or, it was overrepresented by six seats in the European Parliament in 2014.

Moreover, the model situation – as presented above in Table 3 – reflects also a clear risk of a strict proportional allocation of seats in the European Parliament amongst the European Union member states with respect to their population. Six of the demographically smallest European Union member states (Malta, Luxembourg, Cyprus, Estonia, Slovenia and Latvia) would occupy from one to three seats in the European Parliament in such circumstances after the 2014 election. In total, these six small countries would gain only eleven seats in the European Parliament (while three demographically smallest European Union member states – Malta, Luxembourg and Cyprus – would each have just one Member of the European Parliament), and their status and power in the European Parliament would be essentially zero.

Conclusion

Even after 25 years since the first direct election of the European Parliament, there are no clear rules for the apportionment of the number of Members of the European Parliament per individual member state. Although the Treaty of Lisbon introduces the basic principle of degressive proportionality, the total number of Members of the European Parliament and the minimum and maximum number of Members of the European Parliament per European Union member state, but it does not specify the mechanism by which the total population of European Union member states determines the number of Members of the European Parliament that belong to a given European Union member state in the relevant European Parliamentary elections. Therefore, the representation of individual European Union member states in the European Parliament is the result of political negotiations between leading representatives of the European Union member states. This situation should, however, be changed before the next European Parliamentary elections (to be held in 2019) and a binding mechanism for calculating the number of Members of the European Parliament for each European Union member state with respect to its population should be adopted.

Although there previously were attempts to formulate the procedure how to allocate seats in the European Parliament amongst European Union member states, there were never (strictly) applied. One of the well-known is the algorithm set at the meeting of the Council of Europe in 1992. According to this algorithm, each member state receives at least six seats. Simultaneously, the seats are allocated to the member states with the respect to the population density of each member state in the following way: states with a population of 1 to 25 million receive a mandate for every 500 thousand citizens; states with a population of 25 to 60 million receive a mandate for every million citizens; states with a population exceeding 60 million receive a mandate for every 2 million citizens (see, e.g., Cegielka, 2011). Similarly, a group of seven mathematicians and one political scientist led by Professor Geoffrey Grimmet presented at the Committee on Constitutional Affairs meeting in February 2011 their proposal called Cambridge Compromise. The Grimmet's team proposed a two-stage procedure of allocating seats in the European Parliament amongst European Union member states. In the first stage, each European Union member state receives five seats in the European Parliament. In the second stage, the remaining number of seats is divided by the Adams divisor method (series of divisors as follows 0; 1; 2; 3; 4, etc.) which is, according to Geoffrey Grimmet, the most suitable divisor method of proportional representation in this case. By this procedure, each

European Union member state receives a minimum of 6 seats as it is guaranteed in the Treaty of Lisbon (for more details see Grimmet, 2012).

Overall, the very principle of degressive proportionality appears not to be entirely satisfactory. This is mainly due to the fact the principle of degressive proportionality appears to be in conflict, as is, among other things, confirmed by the presented study, with the principle of equality of voting rights. Yet the principle of 'one person – one vote – one value' belongs among the basic common principles (not only) of the European Parliamentary elections. When compared France, the UK, Spain and Germany as the most populated European Union member states on the one hand and Malta or Luxembourg as European Union member states with the least inhabitants on the other, the former need about twelve times more people per a seat in the European Parliament than the latter need. At the same time, it is obvious that the representation of individual European Union member states in the European Parliament must more or less reflect the population size of a given country, but also every European Union member state must obtain a sufficiently large representation in the European Parliament in order to not be an insignificant member of the community. Thus, if the demographically small European Union member states should have a relevant position in the European Parliament, as for example guaranteed in the Treaty of Lisbon, then there is nothing left but to overrepresent them in the form which is currently the case. On the other hand, the situation of unequal representation of the individual European Union member states in the European Parliament is unavoidable in this case. As aptly put by well-known election geographers Peter John Taylor and Ronald John Johnston in their *Geography of Elections* of 1979, if Luxembourg will have six deputies in the European Parliament, then the malapportionment in the European Parliament is inevitable. So it is today, 25 years later. But today it is not only the case of Luxembourg, but moreover the case of Malta, Cyprus, Estonia, Slovenia, Latvia and Lithuania as well.

The objective of the study is not to compare the European Union to a federally arranged state, or the European Parliament to the parliaments of federal states, however, it is useful to recall that the federal states typically resolve this issue by setting up two parliamentary chambers: one chamber reflects the population size of individual federal units, the second chamber is then established according to the principle of equal representation of the various federal units. The European Parliament is a unicameral body and today it seems unlikely that it could receive a second chamber in the near future. Yet in this one chamber, there is obviously an attempt to combine both principles typical for federal parliaments as presented above. This again necessarily presupposes the existence of unequal representation of the individual European Union member states in the European Parliament. But one could argue that this unequal representation is caused or determined by a voluntary agreement between top representatives of the European Union member countries.

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