European Parliament

Briefing

CONSTITUTIONAL AFFAIRS

The Composition of the European Parliament -

Linking the permanent system of the distribution of seats in the European Parliament with the double-majority voting rule in the Council of Ministers

KEY FINDINGS

- This paper proposes the adoption of the **Cambridge Compromise** which is a transparent allocation method for determining the composition of the European Parliament (EP). The method is responsive to population changes and impartial to politics as well as objective, fair and durable. An alternative method is the Cambridge Compromise with power-adjusted populations, called **Power Compromise** for short. The latter is more flexible with respect to the 2014 allocation, but at the cost of some transparency, arising through the involvement of an additional power parameter.
- The EP composition must obey the operational principle of **degressive proportionality** whereby the Member States' representation ratios, that is, the population figure divided by the number of seats before rounding, are decreasing when passing from a more populous Member State to a less populous Member State.
- The same **population figures** should be used for the EP composition and for the qualified majority voting rule in the Council.
- The **Jagiellonian Compromise** is a qualified majority voting rule for the Council providing a more principled method than the current double-majority voting rule.
- **Our principal recommendation** is twofold: the adoption of the Cambridge Compromise, and the (independent) adoption of the Jagiellonian Compromise. While each of these two recommendations stands alone, their coordinated adoption as a pair will bring a balance to the dual structure of Parliament and Council.
- **Seat allocation tables for the 2019 EP** are shown for a Union including the UK. For a Union without the UK, three scenarios are adjoined: with 751 EP seats (maximum size), with 678 EP seats (without the 73 UK seats), and with 723 EP seats. The last is the smallest EP size for which the Power Compromise assigns to every Member State at least as many seats as in its 2014 allocation.

1. TWO PROPOSALS FOR THE ALLOCATION OF EP SEATS

The European Council Decision of 2013 establishing the composition of the EP states in its Art. 4 that the decision shall be revised with the aim of establishing a system to allocate the seats between Member States in an objective, fair, durable and transparent way:[1]

> This Decision shall be revised sufficiently far in advance of the beginning of the 2019-2024 parliamentary term on the basis of an initiative of the European Parliament presented before the end of 2016 with the aim of establishing a system which in future will make it possible, before each fresh election to the European Parliament, to allocate the seats between Member States in an objective, fair, durable and transparent way, translating the principle of degressive proportionality as laid down in Article 1, taking account of any change in their number and demographic trends in their

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population, as duly ascertained thus respecting the overall balance of the institutional system as laid down in the Treaties.

We propose two allocation methods that satisfy the requirements well: the **Cambridge Compromise**,[2] and the **Power Compromise**.[3] The operational details of the two procedures are presented first. Thereafter follow assessments of the methods' merits from the viewpoint of primary and secondary Union law.

Cambridge Compromise

The Cambridge Compromise may be paraphrased as follows:

- Every Member State is assigned a common number of *base seats*. The remaining seats are allocated proportionately to population figures, using the *divisor* method with upward rounding and subject to a maximum allocation. In the case of the current EP, the number of base seats is 5, so that the least populous Member State finishes with 6 seats, and the proportional allocation is capped in order to produce a maximum of 96 seats.

For instance, in Table 1 the Cambridge Compromise proceeds as follows:

- Every Member State is assigned 5 base seats, plus one seat per 846 000 citizens or part thereof, with a maximum cap of 96 seats.

The currently smallest State, Malta, ends with a final tally of 6 seats (with only 4 base seats, Malta would finish with 5 seats; with 6 base seats, it would finish with 7 seats). The initial assignment of 5 base seats to each of the 28 Member States utilises a total of 140 seats, leaving 611 seats for the proportional allocation.

The remaining 611 seats are allocated using the divisor method with upward rounding. The allocation key to be determined is the so-called divisor (846 000).[4] For example, when dividing the Austrian population 8 711 500 by 846 000, the resulting quotient is 10.3. This quotient is rounded upwards to obtain the number of proportionality seats (11). Thus Austria is allocated a total of 16 seats: 5 base seats plus 11 proportionality seats. A similar calculation is carried out for the other Member States. In the case of Germany, the quotient 5 + 97.003 = 102.003 exceeds the capping and is replaced by the 96 seat maximum.

Tables 1, 3, 5 illustrate the Cambridge Compromise, with 5 base seats in each case.

Power Compromise

The Power Compromise is a variant of the Cambridge Compromise that refers not to original population figures, but to power-adjusted population units. It may be worded as follows:

- Every Member State is assigned a common number of *base seats*. The remaining seats are allocated proportionately to adjusted population units (that is, the population figures raised to a common *power*) using the *divisor* method with upward rounding. In the case of the current EP, the number of base seats, the power, and the divisor are determined so that the least populous Member State is allocated 6 seats, the most populous is allocated just 96 seats, and the size of the EP is 751.

For instance, in Table 2 the method proceeds as follows:

- Every Member State is assigned 5 base seats, plus one seat per 254 500 adjusted population units or part thereof, where the adjusted units are obtained by raising the population figures to the power 0.93.

The power 0.93 is determined so that the most populous Member State is allocated just 96 seats.[5] The divisor 254 500 is determined so that the 28 Member States altogether are allocated 751 seats. The base seat assignment in Table 2 is identical to that of Table 1, namely 5. The presence of these allocation keys is dictated by the goal to satisfy the requirements of primary and secondary Union law as discussed below.

Tables 2, 4, 6, 7 illustrate the Power Compromise. The number of base seats varies, with Tables 2 and 6 using 5 base seats, and Tables 4 and 7 using 4 base seats.

In all seven Tables, the number of seats remaining for proportional allocation depends on the numbers of base seats (4 or 5) and of Member States (28 or 27), and on the EP size under consideration (751 or 678 or 723 seats).

Assessment by primary Union law

Primary Union law, as set forth in the Treaty on European Union (TEU), lays conditions upon possible allocation methods.[6] Of particular relevance are the following requirements which we rearrange and paraphrase to ease cross-referencing in this briefing.

1. Citizens are directly represented in the EP (Art. 10(2) TEU).
2. The EP shall be composed of representatives of the Union's citizens (Art. 14(2) TEU).
3. Representation of citizens shall be degressively proportional (Art. 14(2) TEU).
4. The size of the EP shall not exceed 751 seats (Art. 14(2) TEU).
5. Every Member State shall be allocated at least 6 seats (Art. 14(2) TEU).
6. Every Member State shall be allocated at most 96 seats (Art. 14(2) TEU).

There is a potential ambiguity in the term ''Member State'' over whether it refers to government or to people. When "Member State" is interpreted to mean "government", Art. 10(2) TEU decrees that the appropriate representative body is the European Council and the Council, rather than the EP. As far as the composition of the EP is concerned, the term "Member State" means people, that is, a Member State's citizenry.

The Cambridge Compromise complies perfectly well with requirements 1 and 2. The initial assignment of base seats to a Member State secures the representation of its citizenry as a whole. The subsequent proportional allocation of the remaining seats represents the citizens as individuals. Degressive proportionality (requirement 3) will be dealt with in greater detail in Section 3 below. Requirements 4–6 are numerical restrictions which are clearly fulfilled.

In contrast, it is harder to fit the Power Compromise within the framework of requirements 1 and 2. Requirement 1 calls for a direct representation of citizens. At the stage of proportional allocation, the Power Compromise allocates the remaining seats in a manner proportional to "population units" which are a power of the population figures. That is, direct population figures are replaced by transformed quantities. While the invocation of a transformation signals a deviation from the principle of direct representation, it may be justified by the principle of degressive representation.

There is a tension between the principles of direct representation (requirement 1) and of degressive representation (requirement 3), each of which is stipulated by primary Union law. Requirement 1 supports an allocation proportional to population, whereas requirement 3 favours an allocation giving some priority to smaller states. The Cambridge Compromise may be viewed as prioritizing direct representation over degressivity. In contrast, the Power Compromise allows greater degressivity, but at some cost to direct representation.

The two methods yield seat allocations that become increasingly identical as the power parameter becomes closer to unity. They coincide when the power equals unity, and this could occur in the future. For instance, if in Table 2 the German population were to decline by five million to 77 064 489 (with other populations unchanged), the Power Compromise yields power 1 and is hence identical to the Cambridge Compromise. This possibility of future coincidence of the two methods mitigates the marginal disregard by the Power Compromise of the principle of direct representation.

Assessment by secondary Union law

The extended deliberations of the EP on its composition have led to detailed specifications that have found their way into Art. 1 of the 2013 European Council Decision mentioned above:

7. Any more populous Member State shall be allocated at least as many seats as any less populous Member State.
8. The least populous Member State shall be allocated 6 seats.
9. The most populous Member State shall be allocated 96 seats.
10. The principle of degressive proportionality shall require decreasing representation ratios when passing from a more populous Member State to a less populous Member State, where the representation ratio of a Member State is defined to be the ratio of its population figure relative to its number of seats before rounding.

These requirements are satisfied by the Cambridge Compromise as well as by the Power Compromise. Tables 1–7 include columns labelled "Repr.Ratio" in witness of degressive proportionality (requirement 10).

Requirement 9 insists on allocations that achieve the maximum of 96 seats. The requirement can be met with the current data, but it has the potential to breed conflict. For instance, if in Table 1 the German population were to be seven million fewer, namely 75 064 489 (with other population figures unchanged), the Cambridge Compromise would allocate 94 seats to Germany. A forced allocation of 96 seats would violate degressive proportionality (requirement 3). Council has reasoned that requirements 8 and 9 reflect as closely as possible the spectrum of populations-sizes of Member States, but this reasoning is invalid in general.

The Cambridge Compromise results in an increased bunching of Member States near the maximum of 96 seats (as permitted by requirement 9). While this does not threaten degressive proportionality, it disadvantages citizens of any capped Member State relative to those of other large States. In contrast, the seat allocation of the Power Compromise is smoother across its entire range, and in particular at the upper end.

2. FURTHER PROPOSALS

In the literature one can find other proposals on how to determine the composition of the EP. The topic received renewed attention during the 2003 Convention on the Future of Europe. Since then the Treaty of Lisbon entered into force and the 2013 European Council decision decreed further details. The parts that are relevant for the composition of the EP are enunciated in requirements 1–10 above. Of course past literature could not anticipate these later requirements. Therefore one has to be careful when relating past sample allocations with current settings.

Some authors proposed to refer the allocation not only to population figures, but also to gross domestic product.[7] We believe that this reference base can no longer be upheld in view of requirements 1–2. The Members of the EP represent human beings, not economic performance.

Other approaches make use of adjusted population units as does the Power Compromise, but in a different fashion. Rather than raising a population figure N to a power c (in Table 2: $N^c = N^{0.93}$) they advocate other transformations. The parabolic method subtracts a multiple of the squared population: $N - cN^2$; the hyperbolic method subtracts a multiple of the inverse population $N - c/N$.[8] The coefficient c is contingent on the type of transformation chosen and must be calculated from the given population figures.

The challenge is not mathematical multitude, but constitutional adequacy. The more sophisticated the adjustment function, the harder is the proof of its closeness to the principles of primary and secondary Union law, and the more opaque is the method. Moreover the Cambridge Compromise and the Power Compromise yield seat allocations

which for many data sets sandwich the allocations of other methods. For this reason we restrict our briefing to these two methods which can be firmly justified by the legal principles of the Union.

3. DEGRESSIVE PROPORTIONALITY

The oxymoron of "degressive proportionality" has a long tradition in the debates of the EP. One may have degressive representation, proportional representation, or progressive representation just as one may have degressive taxation, proportional taxation, or progressive taxation. "Degressive proportionality", however, is a paradoxical concept. The notion is presented as a manifestation of solidarity in a 2007 text adopted by the EP:[9]

- The more populous States agree to be under-represented in order to allow the less populous States to be represented better.

The 2007 resolution included an attempted specification of degressive proportionality, which has since been recognized as a potential contradiction. Meanwhile the abstract principle of degressive proportionality (requirement 3) has been given a concrete specification capable of practical implementation (requirement 10).

The implementation of degressive proportionality is challenging because the meanings of "citizens" in requirements 2 and 3 differ significantly even though both requirements appear in the same section of Art. 14 TEU. Reference to "Union citizens" (requirement 2) appears to place all citizens on an equal footing. However, the principle of degressive proportionality (requirement 3) discriminates the "citizens" by Member States. The citizens of more populous Member States agree to be under-represented in order to allow the citizens of less populous Member States to be represented better.

The Cambridge Compromise achieves degressive proportionality without distorting the meaning of "citizens" beyond the minimum. It does so in each of its two stages. The first stage of assigning base seats treats all Member States alike. This is extremely degressive since it neglects population figures entirely. The second stage of proportional allocation of the remaining seats embodies a mild form of degressivity through the use of *upward* rounding. Upward rounding is known to introduce a slight bias in favour of the less populous Member States.[10] This type of bias reinforces the effect of degressive proportionality.

In contrast the Power Compromise achieves degressive proportionality by interpreting the term "citizens" in a rather broad sense. The method replaces lucent population figures – which count concrete citizens – by arcane population units – which measure abstract units. In Table 2, Malta's population of 434 403 citizens is transformed to 175 082 population units. Does this mean that only forty percent of the citizenry is accounted for?[11] Or forty percent of each citizen? Neither interpretation seems profitable; the interim power-adjustments remain obscure. Their justification lies in the final result which thereby achieves a higher degree of degressivity.

4. POPULATION CRITERION

How does one determine the number of citizens in a Member State? Whom does one count? These questions are fundamental to requirements 1–3. They demand quick practical answers, while also inviting more principled reflections.

Available population figures are those decreed annually by Council Decision for the qualified majority voting (QMV) rule in the Council of Ministers. The figures for the calendar year 2017 provide the input data for our tables.[12] The corresponding columns are labelled "QMV2017".

Since the Council and the EP are constitutional organs of the European Union with joint governance responsibility, we are compelled to the recommendation that the two institutions employ the same population data.

We return to the questions above. Presumably everybody would endorse the aim that

- every individual who qualifies as a "citizen" in the sense of requirements 1–3 shall be counted at least once and at most once. That is, he or she shall be counted exactly once.

This modest aim is challenging to achieve, considering that the data are gathered by a host of domestic statistical offices before being communicated to EuroStat. To this end it seems efficient and appropriate to continue to base all population figures on the internationally (UN) approved notion of "total resident population".

5. INTER-INSTITUTIONAL BALANCE

Population figures feature not only in the seat allocation of the EP, but also in the qualified majority voting rule of the Council. A group of Member States constitutes a qualified majority provided the group consists of at least 55 percent of all Member States (that is, at least 16 Member States out of 28) and the Member States in the group represent at least 65 percent of the Union's population. This decision rule is known as the **double-majority voting rule**.

There is an established mathematical framework for the evaluation of fairness within a qualified majority voting system. It focuses on two quantities: the **decision power of a Member State**, and the **indirect decision power of a Union citizen.**[13] The indirect decision power of a Union citizen is determined from the decision power of his or her Member State by dividing the latter by the square root of the Member State's population figure. It transpires that the double-majority voting rule leads to an uneven distribution of the indirect decision powers of the Union citizens. Citizens from middle-sized Member States have slightly less power than citizens from Member States that are smaller (due to the 55 percent clause) or larger (due to the 65 percent clause).[14]

The **Jagiellonian Compromise** is a qualified majority voting rule that awards all Union citizens an equal indirect decision power. It assigns to each Member State a voting weight that is defined to be the square root of its population figure. Furthermore it introduces a **quota**. The Jagiellonian quota is defined to be the average of the square root of the population total and the sum of the voting weights.[15] According to the Jagiellonian Compromise a group of Member States qualifies as a majority provided the sum of their voting weights meets or exceeds the quota.

In terms of conceptual analysis the Jagiellonian Compromise is unique in its transparency. It turns out that the decision power of a Member State is practically the same as its normalized voting weight, that is, its voting weight divided by the voting weight total.[16] As a consequence the indirect decision power of every citizen attains the same value. Numerically this cannot be but a tiny quantity in a Union of half a billion of citizens. The principal conclusion is conceptual:

- The Jagiellonian Compromise awards to all Union citizens the same and equal power to participate, indirectly via their governments, in Council's decisions.

Table 8 illustrates the application of the Jagiellonian Compromise to the current Council, Table 9 to a Council without UK.

6. RECOMMENDATIONS

We believe that the Union's institutions will be served best by the adoption of the Cambridge Compromise for the composition of the EP, and the Jagiellonian Compromise for the qualified majority voting rule in the Council. These are two independent recommendations.

There is added strength in the above recommendations when viewed as a pair. The Cambridge Compromise would transfer some of the representative weight from middle-sized Member States to smaller and larger Member States. The Jagiellonian Compromise would transfer some of the decision power from smaller and larger Member States to middle-sized Member States. The transfer directions have a balancing effect, and thus the pair is in equilibrium. Each of these transfers is soundly rooted in the constitutional directive to put citizens first.

If the full Cambridge Compromise is viewed as being too insensitive to the current composition of the EP, the Power Compromise may be considered as an interim measure. If the latter were to be adopted for the 2019 allocation, our recommendation of the Jagiellonian Compromise would still stand.

We recommend that the adopted allocation method be firmly rooted in primary and secondary Union law, and that such consideration should receive prominent emphasis. Neither the Cambridge Compromise nor the Power Compromise requires a change to primary Union law. Moreover both methods are compatible with the establishment of a joint constituency, as supported by the EP in a 2015 vote.[17]

7. SEAT ALLOCATION TABLES FOR THE 2019 EP

Seven tables are presented to illustrate how the Cambridge Compromise (CC) and the Power Compromise (PC) apply to various scenarios.

Table 1 (CC-28-751) and Table 2 (PC-28-751) deal with the current Union of 28 Member States – that is, including the UK – and maintain the current EP size of 751 seats.

Table 3 (CC-27-751) and Table 4 (PC-27-751) deal with a Union of 27 Member States – that is, without the UK – and an EP of continuing size of 751 seats.

Table 5 (CC-27-678) and Table 6 (PC-27-678) are based on the assumption that, upon Brexit, the 73 UK seats are left vacant. This option reduces the EP size to 678 seats.

All tables include a final column exhibiting the differences between the proposed seat allocations and the 2014 status quo seats. These differences are sometimes appreciable. We emphasize that the 2014 allocation is a patchwork without systematic rationale, and that it fails to satisfy the principle of degressive proportionality. It is a challenging undertaking to achieve a progression towards a representative equilibrium among Union citizens. Once a start is made and the inherited unevenness is reduced, future re-allocations are solely reflective of natural population dynamics.

Of the six tables, only Table 4 (PC-27-751) does not imply any reduction in the number of seats of a Member State assigned to it in 2014. That is, no Member State has to relinquish any of its current seats. We note that a no-loss situation emerges also with fewer seats. The smallest EP size to achieve this effect, with the Power Compromise and with the 2017 population figures, is 723 seats.

Table 7 (PC-27-723) displays the allocation of 723 EP seats between the 27 Member States (without UK) that emerges when using the Power Compromise.

Table 1 : Cambridge Compromise, including UK

CC-28-751	QMV2017	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	~~5+97.003~~	96	854 838	96	0
France	66 661 621	5+78.8	84	795 520	74	10
United Kingdom	65 341 183	5+77.2	83	794 562	73	10
Italy	61 302 519	5+72.5	78	791 392	73	5
Spain	46 438 422	5+54.9	60	775 373	54	6
Poland	37 967 209	5+44.9	50	761 194	51	-1
Romania	19 759 968	5+23.4	29	696 830	32	-3
The Netherlands	17 235 349	5+20.4	26	679 286	26	0
Belgium	11 289 853	5+13.3	19	615 419	21	-2
Greece	10 793 526	5+12.8	18	607 802	21	-3
Czech Republic	10 445 783	5+12.3	18	602 157	21	-3
Portugal	10 341 330	5+12.2	18	600 410	21	-3
Sweden	9 998 000	5+11.8	17	594 483	21	-4
Hungary	9 830 485	5+11.6	17	591 487	20	-3
Austria	8 711 500	5+10.3	16	569 480	18	-2
Bulgaria	7 153 784	5+8.5	14	531 642	17	-3
Denmark	5 700 917	5+6.7	12	485 653	13	-1
Finland	5 465 408	5+6.5	12	476 899	13	-1
Slovakia	5 407 910	5+6.4	12	474 698	13	-1
Ireland	4 664 156	5+5.5	11	443 648	11	0
Croatia	4 190 669	5+4.95	10	421 024	11	-1
Lithuania	2 888 558	5+3.4	9	343 289	11	-2
Slovenia	2 064 188	5+2.4	8	277 447	8	0
Latvia	1 968 957	5+2.3	8	268 713	8	0
Estonia	1 315 944	5+1.6	7	200 739	6	1
Cyprus	848 319	5+1.003	7	141 322	6	1
Luxembourg	576 249	5+0.7	6	101 432	6	0
Malta	434 403	5+0.5	6	78 789	6	0
Sum (Divisor)	**510 860 699**	**(846 000)**	**751**	**–**	**751**	**±33**

Notes:

Cambridge Compromise:
Every Member State is assigned 5 base seats, plus one seat per 846 000 citizens or part thereof, with a maximum cap of 96 seats.

Allocation Keys:
There are two allocation keys: the number of base sets (5) and the divisor (846 000). They are determined so that so the least populous Member state is allocated 6 seats and the size of the EP is 751 seats.

Sample calculations for Malta:
Quotient = Base seats+(QMV2017/Divisor) = 5+0.5 = 5.5, rounded upwards to 6 seats
Representation Ratio = QMV2017/Quotient = 434 403 / (5 + 434 403 / 846 000) = 78 789

Maximum cap active only for Germany:
Quotient for Germany 5+97.003 = 102.003 is discarded and capped at 96 seats.

Verification of degressive proportionality:
Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. Altogether 33 seats are transferred between middle-sized and larger or smaller Member States.

Table 2 : Power Compromise, including UK

PC-28-751	QMV2017	Adjusted	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	22 917 350	5+90.05	96	863 396	96	0
France	66 661 621	18 888 808	5+74.2	80	841 482	74	6
United Kingdom	65 341 183	18 540 605	5+72.9	78	839 310	73	5
Italy	61 302 519	17 472 492	5+68.7	74	832 302	73	1
Spain	46 438 422	13 495 719	5+53.03	59	800 271	54	5
Poland	37 967 209	11 190 515	5+43.97	49	775 306	51	-2
Romania	19 759 968	6 096 509	5+23.95	29	682 441	32	-3
The Netherlands	17 235 349	5 368 719	5+21.1	27	660 481	26	1
Belgium	11 289 853	3 622 431	5+14.2	20	586 988	21	-1
Greece	10 793 526	3 474 097	5+13.7	19	578 720	21	-2
Czech Republic	10 445 783	3 369 885	5+13.2	19	572 648	21	-2
Portugal	10 341 330	3 338 536	5+13.1	19	570 776	21	-2
Sweden	9 998 000	3 235 335	5+12.7	18	564 460	21	-3
Hungary	9 830 485	3 184 892	5+12.5	18	561 283	20	-2
Austria	8 711 500	2 846 338	5+11.2	17	538 277	18	-1
Bulgaria	7 153 784	2 369 836	5+9.3	15	499 854	17	-2
Denmark	5 700 917	1 918 795	5+7.5	13	454 638	13	0
Finland	5 465 408	1 844 969	5+7.2	13	446 178	13	0
Slovakia	5 407 910	1 826 911	5+7.2	13	444 056	13	0
Ireland	4 664 156	1 592 058	5+6.3	12	414 384	11	1
Croatia	4 190 669	1 441 198	5+5.7	11	393 016	11	0
Lithuania	2 888 558	1 019 608	5+4.01	10	320 726	11	-1
Slovenia	2 064 188	745 962	5+2.9	8	260 265	8	0
Latvia	1 968 957	713 904	5+2.8	8	252 265	8	0
Estonia	1 315 944	490 784	5+1.9	7	189 934	6	1
Cyprus	848 319	326 257	5+1.3	7	135 041	6	1
Luxembourg	576 249	227 702	5+0.9	6	97 757	6	0
Malta	434 403	175 082	5+0.7	6	76 373	6	0
Sum (Keys)	**510 860 699**	**(0.93)**	**(254 500)**	**751**	**–**	**751**	**±21**

Notes:

Power Compromise:

Every Member State is assigned 5 base seats, plus one seat per 254 500 adjusted population units or part thereof, where the adjusted units are obtained by raising the population figures to the power 0.93.

Allocation Keys:

There are three allocation keys: the number of base seats (5), the power (0.93), and the divisor (254 500). They are determined so that the least populous Member State is allocated 6 seats, the most populous Member State is allocated just 96 seats, and the size of the EP is 751 seats.

Sample calculations for Malta:

Adjusted population units = $434\,403^{0.93} = 175\,082$

Quotient = Base seats+(Adjusted/Divisor) = 5+0.7 = 5.7, rounded upwards to 6 seats

Representation Ratio = QMV2017/Quotient = $434\,403 / (5 + 434\,403^{0.93} / 254\,500) = 76\,373$

Maximum cap is automatic since it is built into determination of power 0.93.

Verification of degressive proportionality:

Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. Altogether 21 seats are transferred between middle-sized and larger or smaller Member States.

Table 3: Cambridge Compromise, without UK and with 751 EP seats

CC-27-751	QMV2017	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	~~5+116.7~~	96	854 838	96	0
France	66 661 621	~~5+94.8~~	96	694 392	74	22
Italy	61 302 519	5+87.2	93	665 235	73	20
Spain	46 438 422	5+66.02	72	653 879	54	18
Poland	37 967 209	5+53.98	59	643 766	51	8
Romania	19 759 968	5+28.1	34	597 121	32	2
The Netherlands	17 235 349	5+24.5	30	584 191	26	4
Belgium	11 289 853	5+16.1	22	536 325	21	1
Greece	10 793 526	5+15.3	21	530 530	21	0
Czech Republic	10 445 783	5+14.9	20	526 225	21	-1
Portugal	10 341 330	5+14.7	20	524 889	21	-1
Sweden	9 998 000	5+14.2	20	520 355	21	-1
Hungary	9 830 485	5+13.98	19	518 057	20	-1
Austria	8 711 500	5+12.4	18	501 097	18	0
Bulgaria	7 153 784	5+10.2	16	471 565	17	-1
Denmark	5 700 917	5+8.1	14	435 025	13	1
Finland	5 465 408	5+7.8	13	427 989	13	0
Slovakia	5 407 910	5+7.7	13	426 214	13	0
Ireland	4 664 156	5+6.6	12	401 015	11	1
Croatia	4 190 669	5+5.96	11	382 439	11	0
Lithuania	2 888 558	5+4.1	10	317 195	11	-1
Slovenia	2 064 188	5+2.9	8	260 151	8	0
Latvia	1 968 957	5+2.8	8	252 456	8	0
Estonia	1 315 944	5+1.9	7	191 526	6	1
Cyprus	848 319	5+1.2	7	136 693	6	1
Luxembourg	576 249	5+0.8	6	99 025	6	0
Malta	434 403	5+0.6	6	77 329	6	0
Sum (Divisor)	**445 519 516**	**(703 400)**	**751**	**–**	**678**	**79-6**

Notes:

Cambridge Compromise:
Every Member State is assigned 5 base seats, plus one seat per 703 400 citizens or part thereof, with a maximum cap of 96 seats.

Allocation Keys:
There are two allocation keys: the number of base sets (5) and the divisor (703 400). They are determined so that so the least populous Member state is allocated 6 seats and the size of the EP is 751 seats.

Sample calculations for Malta:
Quotient = Base seats+(QMV2017/Divisor) = 5+0.6 = 5.6, rounded upwards to 6 seats
Representation Ratio = QMV2017/Quotient = 434 403 / (5 + 434 403 / 703 400) = 77 329

Maximum cap active for Germany and France:
Quotient for Germany 5+116.7 = 121.7 is discarded and capped at 96 seats.
Quotient for France 5+94.8 =99.8 is discarded and capped at 96 seats.

Verification of degressive proportionality:
Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. In addition to the reallocation of 73 former UK seats, 6 seats are transferred between middle-sized and larger or smaller Member States.

Table 4: Power Compromise, without UK and with 751 EP seats

PC-27-751	QMV2017	Adjusted	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	1 311 119	4+91.3	96	849 331	96	0
France	66 661 621	1 116 493	4+77.8	82	802 940	74	8
Italy	61 302 519	1 046 455	4+72.9	77	784 646	73	4
Spain	46 438 422	844 299	4+58.8	63	725 593	54	9
Poland	37 967 209	722 575	4+50.3	55	684 163	51	4
Romania	19 759 968	436 157	4+30.4	35	556 946	32	3
The Netherlands	17 235 349	392 421	4+27.3	32	531 580	26	6
Belgium	11 289 853	282 962	4+19.7	24	455 719	21	3
Greece	10 793 526	273 297	4+19.03	24	447 895	21	3
Czech Republic	10 445 783	266 466	4+18.6	23	442 225	21	2
Portugal	10 341 330	264 404	4+18.4	23	440 491	21	2
Sweden	9 998 000	257 592	4+17.9	22	434 679	21	1
Hungary	9 830 485	254 250	4+17.7	22	431 781	20	2
Austria	8 711 500	231 575	4+16.1	21	411 255	18	3
Bulgaria	7 153 784	198 864	4+13.8	18	378 570	17	1
Denmark	5 700 917	166 857	4+11.6	16	342 188	13	3
Finland	5 465 408	161 504	4+11.2	16	335 588	13	3
Slovakia	5 407 910	160 189	4+11.2	16	333 942	13	3
Ireland	4 664 156	142 877	4+9.9	14	311 267	11	3
Croatia	4 190 669	131 530	4+9.2	14	295 295	11	3
Lithuania	2 888 558	98 652	4+6.9	11	242 860	11	0
Slovenia	2 064 188	76 085	4+5.3	10	200 078	8	2
Latvia	1 968 957	73 358	4+5.1	10	194 440	8	2
Estonia	1 315 944	53 724	4+3.7	8	150 319	6	2
Cyprus	848 319	38 263	4+2.7	7	110 547	6	1
Luxembourg	576 249	28 376	4+1.98	6	82 522	6	0
Malta	434 403	22 808	4+1.6	6	65 880	6	0
Sum (Keys)	**445 519 516**	**(0.773)**	**(14 360)**	**751**	**–**	**678**	**73-0**

Notes:

Power Compromise:
Every Member State is assigned 4 base seats, plus one seat per 14 360 adjusted population units or part thereof, where the adjusted units are obtained by raising the population figures to the power 0.773.

Allocation Keys:
There are three allocation keys: the number of base seats (4), the power (0.773), and the divisor (14 360). They are determined so that the least populous Member State is allocated 6 seats, the most populous Member State is allocated just 96 seats, and the size of the EP is 751 seats.

Sample calculations for Malta:
Adjusted population units = $434\,403^{0.773} = 22\,808$
Quotient = Base seats+(Adjusted/Divisor) = 4+1.6 = 5.6, rounded upwards to 6 seats
Representation Ratio = QMV2017/Quotient = $434\,403 / (4 + 434\,403^{0.773} / 14\,360) = 65\,880$

Maximum cap is automatic since it is built into determination of power 0.773.

Verification of degressive proportionality:
Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. With the reallocation of 73 former UK seats no Member State has to relinquish any of its 2014 seats.

Table 5: Cambridge Compromise, without UK and with 678 EP seats

CC-27-678	QMV2017	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	~~5+99.2~~	96	854 838	96	0
France	66 661 621	5+80.6	86	778 698	74	12
Italy	61 302 519	5+74.1	80	774 742	73	7
Spain	46 438 422	5+56.2	62	759 383	54	8
Poland	37 967 209	5+45.9	51	745 778	51	0
Romania	19 759 968	5+23.9	29	683 888	32	-3
The Netherlands	17 235 349	5+20.8	26	666 982	26	0
Belgium	11 289 853	5+13.7	19	605 303	21	-2
Greece	10 793 526	5+13.1	19	597 932	21	-2
Czech Republic	10 445 783	5+12.6	18	592 469	21	-3
Portugal	10 341 330	5+12.5	18	590 777	21	-3
Sweden	9 998 000	5+12.1	18	585 038	21	-3
Hungary	9 830 485	5+11.9	17	582 136	20	-3
Austria	8 711 500	5+10.5	16	560 807	18	-2
Bulgaria	7 153 784	5+8.7	14	524 076	17	-3
Denmark	5 700 917	5+6.9	12	479 331	13	-1
Finland	5 465 408	5+6.6	12	470 802	13	-1
Slovakia	5 407 910	5+6.5	12	468 656	13	-1
Ireland	4 664 156	5+5.6	11	438 367	11	0
Croatia	4 190 669	5+5.1	11	416 265	11	0
Lithuania	2 888 558	5+3.5	9	340 118	11	-2
Slovenia	2 064 188	5+2.5	8	275 372	8	0
Latvia	1 968 957	5+2.4	8	266 766	8	0
Estonia	1 315 944	5+1.6	7	199 651	6	1
Cyprus	848 319	5+1.03	7	140 782	6	1
Luxembourg	576 249	5+0.7	6	101 153	6	0
Malta	434 403	5+0.5	6	78 621	6	0
Sum (Divisor)	**445 519 516**	**(827 000)**	**678**	**–**	**678**	**±29**

Notes:

Cambridge Compromise:
Every Member State is assigned 5 base seats, plus one seat per 827 000 citizens or part thereof, with a maximum cap of 96 seats.

Allocation Keys:
There are two allocation keys: the number of base sets (5) and the divisor (827 000). They are determined so that so the least populous Member state is allocated 6 seats and the size of the EP is 678 seats.

Sample calculations for Malta:
Quotient = Base seats + (QMV2017/Divisor) = 5+0.5 = 5.5, rounded upwards to 6 seats
Representation Ratio = QMV2017/Quotient = 434 403 / (5 + 434 403 / 827 000) = 78 621

Maximum cap active only for Germany:
Quotient for Germany 5+99.2 = 104.2 is discarded and capped at 96 seats.

Verification of degressive proportionality:
Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. Altogether 29 seats are transferred between middle-sized and larger or smaller Member States.

Table 6 : Power Compromise, without UK and with 678 EP seats

PC-27-678	QMV2017	Adjusted	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	19 099 537	5+90.2	96	861 842	96	0
France	66 661 621	15 774 870	5+74.5	80	838 351	74	6
Italy	61 302 519	14 604 277	5+68.99	74	828 572	73	1
Spain	46 438 422	11 311 684	5+53.4	59	794 735	54	5
Poland	37 967 209	9 398 444	5+44.4	50	768 643	51	-1
Romania	19 759 968	5 153 750	5+24.3	30	673 377	32	-2
The Netherlands	17 235 349	4 544 713	5+21.5	27	651 184	26	1
Belgium	11 289 853	3 079 450	5+14.5	20	577 596	21	-1
Greece	10 793 526	2 954 679	5+13.96	19	569 371	21	-2
Czech Republic	10 445 783	2 866 987	5+13.5	19	563 337	21	-2
Portugal	10 341 330	2 840 601	5+13.4	19	561 478	21	-2
Sweden	9 998 000	2 753 722	5+13.01	19	555 208	21	-2
Hungary	9 830 485	2 711 246	5+12.8	18	552 057	20	-2
Austria	8 711 500	2 425 970	5+11.5	17	529 270	18	-1
Bulgaria	7 153 784	2 023 825	5+9.6	15	491 336	17	-2
Denmark	5 700 917	1 642 363	5+7.8	13	446 851	13	0
Finland	5 465 408	1 579 839	5+7.5	13	438 544	13	0
Slovakia	5 407 910	1 564 542	5+7.4	13	436 461	13	0
Ireland	4 664 156	1 365 436	5+6.4	12	407 355	11	1
Croatia	4 190 669	1 237 373	5+5.8	11	386 417	11	0
Lithuania	2 888 558	878 672	5+4.2	10	315 670	11	-1
Slovenia	2 064 188	645 014	5+3.05	9	256 522	8	1
Latvia	1 968 957	617 586	5+2.9	8	248 691	8	0
Estonia	1 315 944	426 283	5+2.01	8	187 627	6	2
Cyprus	848 319	284 626	5+1.3	7	133 710	6	1
Luxembourg	576 249	199 417	5+0.9	6	96 979	6	0
Malta	434 403	153 766	5+0.7	6	75 860	6	0
Sum (Keys)	**445 519 516**	**(0.92)**	**(211 700)**	**678**	**–**	**678**	**±18**

Notes:

Power Compromise:

Every Member State is assigned 5 base seats, plus one seat per 211 700 adjusted population units or part thereof, where the adjusted units are obtained by raising the population figures to the power 0.92.

Allocation Keys:

There are three allocation keys: the number of base seats (5), the power (0.92), and the divisor (211 700). They are determined so that the least populous Member state is allocated 6 seats, the most populous Member State is allocated just 96 seats, and the size of the EP is 678 seats.

Sample calculations for Malta:

Adjusted population units = $434\,403^{0.92}$ = 153 766

Quotient = Base seats+(Adjusted/Divisor) = 5+0.7 = 5.7, rounded upwards to 6 seats

Representation Ratio = QMV2017/Quotient = 434 403 / (5 + $434\,403^{0.92}$ / 211 700)= 75 860

Maximum cap is automatic since it is built into determination of power 0.92.

Verification of degressive proportionality:

Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. Altogether 18 seats are transferred between middle-sized and larger or smaller Member States.

Table 7 : Power Compromise, without UK and with 723 EP seats

PC-27-723	QMV2017	Adjusted	Quotient	Seats	Repr.Ratio	2014	Diff.
Germany	82 064 489	2 717 742	4+91.2	96	862 305	96	0
France	66 661 621	2 295 150	4+76.99	81	823 058	74	7
Italy	61 302 519	2 143 976	4+71.9	76	807 448	73	3
Spain	46 438 422	1 710 690	4+57.4	62	756 493	54	8
Poland	37 967 209	1 452 310	4+48.7	53	720 182	51	2
Romania	19 759 968	854 032	4+28.6	33	605 221	32	1
The Netherlands	17 235 349	764 204	4+25.6	30	581 571	26	4
Belgium	11 289 853	541 796	4+18.2	23	509 126	21	2
Greece	10 793 526	522 350	4+17.5	22	501 496	21	1
Czech Republic	10 445 783	508 627	4+17.1	22	495 947	21	1
Portugal	10 341 330	504 488	4+16.9	21	494 246	21	0
Sweden	9 998 000	490 828	4+16.5	21	488 536	21	0
Hungary	9 830 485	484 132	4+16.2	21	485 682	20	1
Austria	8 711 500	438 829	4+14.7	19	465 336	18	1
Bulgaria	7 153 784	373 885	4+12.5	17	432 455	17	0
Denmark	5 700 917	310 873	4+10.4	15	395 116	13	2
Finland	5 465 408	300 391	4+10.1	15	388 255	13	2
Slovakia	5 407 910	297 819	4+9.99	14	386 539	13	1
Ireland	4 664 156	264 066	4+8.9	13	362 735	11	2
Croatia	4 190 669	242 056	4+8.1	13	345 766	11	2
Lithuania	2 888 558	178 868	4+6.0003	11	288 848	11	0
Slovenia	2 064 188	136 110	4+4.6	9	240 977	8	1
Latvia	1 968 957	130 983	4+4.4	9	234 569	8	1
Estonia	1 315 944	94 393	4+3.2	8	183 625	6	2
Cyprus	848 319	66 057	4+2.2	7	136 475	6	1
Luxembourg	576 249	48 237	4+1.6	6	102 569	6	0
Malta	434 403	38 336	4+1.3	6	82 180	6	0
Sum (Keys)	**445 519 516**	**(0.813)**	**(29 810)**	**723**	**–**	**678**	**45-0**

Notes:

Power Compromise:
Every Member State is assigned 4 base seats, plus one seat per 29 810 adjusted population units or part thereof, where the adjusted units are obtained by raising the population figures to the power 0.813.

Allocation Keys:
There are three allocation keys: the number of base seats (4), the power (0.813), and the divisor (29 810). They are determined so that the least populous Member state is allocated 6 seats, the most populous Member State is allocated just 96 seats, and the size of the EP is 723 seats.

Sample calculations for Malta:
Adjusted population units = $434\,403^{0.813} = 38\,336$
Quotient = Base seats+(Adjusted/Divisor) = 4+1.3 = 5.3, rounded upwards to 6 seats
Representation Ratio = QMV2017/Quotient = $434\,403 / (4 + 434\,403^{0.813} / 29\,810) = 82\,180$

Maximum cap is automatic since it is built into determination of power 0.813.

Verification of degressive proportionality:
Representation ratios decrease when passing from more populous to less populous Member States.

Column "Diff." exhibits deviations of proposed "Seats" from "2014" seats. With the reallocation of 45 of the former UK seats no Member State has to relinquish any of its 2014 seats.

Table 8 : Jagiellonian Compromise, including UK

JagCom-28	QMV2017	Voting Weight	Decision Power	DM2017	Diff.
Germany	82 064 489	9 059	9.13	10.25	-1.12
France	66 661 621	8 165	8.25	8.44	-0.19
United Kingdom	65 341 183	8 083	8.17	8.29	-0.12
Italy	61 302 519	7 830	7.91	7.86	0.05
Spain	46 438 422	6 815	6.89	6.18	0.71
Poland	37 967 209	6 162	6.23	5.07	1.16
Romania	19 759 968	4 445	4.49	3.75	0.74
The Netherlands	17 235 349	4 152	4.19	3.49	0.70
Belgium	11 289 853	3 360	3.39	2.89	0.50
Greece	10 793 526	3 285	3.32	2.85	0.47
Czech Republic	10 445 783	3 232	3.26	2.81	0.45
Portugal	10 341 330	3 216	3.25	2.80	0.45
Sweden	9 998 000	3 162	3.19	2.77	0.42
Hungary	9 830 485	3 135	3.17	2.75	0.42
Austria	8 711 500	2 952	2.98	2.64	0.34
Bulgaria	7 153 784	2 675	2.70	2.48	0.22
Denmark	5 700 917	2 388	2.41	2.33	0.08
Finland	5 465 408	2 338	2.36	2.31	0.05
Slovakia	5 407 910	2 325	2.35	2.30	0.05
Ireland	4 664 156	2 160	2.18	2.23	-0.05
Croatia	4 190 669	2 047	2.07	2.18	-0.11
Lithuania	2 888 558	1 700	1.72	2.05	-0.33
Slovenia	2 064 188	1 437	1.45	1.97	-0.52
Latvia	1 968 957	1 403	1.42	1.96	-0.54
Estonia	1 315 944	1 147	1.16	1.89	-0.73
Cyprus	848 319	921	0.93	1.84	-0.91
Luxembourg	576 249	759	0.77	1.82	-1.05
Malta	434 403	659	0.66	1.80	-1.14
Sum	**510 860 699**	**99 012**	**100.00**	**100.00**	**±6.81**
Quota		**60 807**	**61.41**		

Notes:

Jagiellonian Compromise:

A group of Member States constitutes a qualified majority provided the sum of their voting weights meets or exceeds the quota 60 807.

System keys:

A Member State's voting weight is the square root of its population figure, rounded to the nearest whole number.

The quota 60 807 is the average of the square root of the population total ($510\ 860\ 699^{0.5} = 22\ 602.2$) and the sum of the voting weights (99 012), rounded upwards.

System merits:

The decision power of a Member State is identical to the percentage voting weight.

The indirect decision powers of all Union citizens are equal.

Column "Diff." exhibits the deviations of the "Decision Power" of the proposed Jagiellonian Compromise from the "DM2017" decision power of the double-majority voting rule in 2017. A total of 6.81 percent decision power is transferred between middle-sized and larger or smaller Member States.

Table 9 : Jagiellonian Compromise, without UK

JagCom-27	QMV2017	Voting Weight	Decision Power	DM2017	Diff.
Germany	82 064 489	9 059	9.94	11.98	-2.04
France	66 661 621	8 165	8.98	9.95	-0.97
Italy	61 302 519	7 830	8.62	9.18	-0.56
Spain	46 438 422	6 815	7.51	7.62	-0.11
Poland	37 967 209	6 162	6.79	6.49	0.30
Romania	19 759 968	4 445	4.89	4.00	0.89
The Netherlands	17 235 349	4 152	4.57	3.71	0.86
Belgium	11 289 853	3 360	3.70	3.02	0.68
Greece	10 793 526	3 285	3.61	2.96	0.65
Czech Republic	10 445 783	3 232	3.55	2.92	0.63
Portugal	10 341 330	3 216	3.54	2.91	0.63
Sweden	9 998 000	3 162	3.48	2.87	0.61
Hungary	9 830 485	3 135	3.45	2.85	0.60
Austria	8 711 500	2 952	3.25	2.71	0.54
Bulgaria	7 153 784	2 675	2.94	2.53	0.41
Denmark	5 700 917	2 388	2.62	2.35	0.27
Finland	5 465 408	2 338	2.57	2.33	0.24
Slovakia	5 407 910	2 325	2.56	2.32	0.24
Ireland	4 664 156	2 160	2.37	2.23	0.14
Croatia	4 190 669	2 047	2.25	2.17	0.08
Lithuania	2 888 558	1 700	1.87	2.02	-0.15
Slovenia	2 064 188	1 437	1.58	1.92	-0.34
Latvia	1 968 957	1 403	1.54	1.90	-0.36
Estonia	1 315 944	1 147	1.26	1.83	-0.57
Cyprus	848 319	921	1.01	1.77	-0.76
Luxembourg	576 249	759	0.83	1.74	-0.91
Malta	434 403	659	0.72	1.72	-1.00
Sum	**445 519 516**	**90 929**	**100.00**	**100.00**	**±7.77**
Quota		**56 019**	**61.61**		

Notes:

Jagiellonian Compromise:
A group of Member States constitutes a qualified majority provided the sum of their voting weights meets or exceeds the quota 56 019.

System keys:
A Member State's voting weight is the square root of its population figure, rounded to the nearest whole number.
The quota 56 019 is the average of the square root of the population total ($445\ 519\ 516^{0.5} = 21\ 107.3$) and the sum of the voting weights (90 929), rounded upwards.

System merits:
The decision power of a Member State is identical to the percentage voting weight.
The indirect decision powers of all Union citizens are equal.

Column "Diff." exhibits the deviations of the "Decision Power" of the proposed Jagiellonian Compromise from the "DM2017" decision power of the double-majority voting rule in 2017. A total of 7.77 percent decision power is transferred between middle-sized and larger or smaller Member States.

[1] OJ L 181, 29.6.2013, pp. 57–58 (www.uni-augsburg.de/bazi/OJ/2013L181p57.pdf).

[2] G.R. Grimmett / J.-F. Laslier / F. Pukelsheim / V. Ramírez González / R. Rose / W. Słomczyński / M. Zachariasen / K. Życzkowski: *The Allocation Between the EU Member States of the Seats in the European Parliament – Cambridge Compromise. Note.* European Parliament, Directorate-General for Internal Policies, Policy Department C: Citizen's Rights and Constitutional Affairs, PE 432.760, March 2011 (www.uni-augsburg.de/pukelsheim/2011f.pdf).

[3] G.R. Grimmett / K.-F. Oelbermann / F. Pukelsheim: A power-weighted variant of the EU27 Cambridge Compromise. *Mathematical Social Sciences* 63, 2012, pp. 136-140 (www.uni-augsburg.de/pukelsheim/2012a.pdf). – Power adjustments have been proposed in the literature since quite some time. See, for example: (1) H. Theil: The desired political entropy. *American Political Science Review* 63, 1969, pp. 521-525. (2) H. Theil / L. Schrage: The apportionment problem and the European Parliament. *European Economic Review* 9, 1977, pp. 247-263. (3) A. Moberg: The voting system in the Council of the European Union. The balance between large and small countries. *Scandinavian Political Studies* 21, 1998, pp. 347-365. Reprinted in: A. Moberg: *The Weight of Nations. Four Papers on the Institutional Negotiations in the EU 1996–2007*. Malmö, 2014 (www.uni-augsburg.de/ bazi/Moberg2014.pdf). (4) F. Arndt: Distribution of seats at the European Parliament – Democratic political equality, protection of diversity and the enlargement process. In: *The Emerging Constitutional Law of the European Union – German and Polish Perspectives, Beiträge zum ausländischen öffentlichen Recht und Völkerrecht* 163, 2003, pp. 93-115. (5) F. Arndt: Ausrechnen statt aushandeln: Rationalitätsgewinne durch ein formalisiertes Modell für die Bestimmung der Zusammensetzung des Europäischen Parlaments (with an English summary). *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht – Heidelberg Journal of International Law* 68, 2008, pp. 247-279.

[4] An efficient way to determine the divisor is discussed, for example, in Sect. 4.6 of F. Pukelsheim: *Proportional Representation – Apportionment Methods and Their Applications. With a Foreword by Andrew Duff MEP.* Cham, 2014 (www.uni-augsburg.de/pukelsheim/2014a-FrontMatter.pdf).

[5] Generally there are several powers that guarantee 96 seats for the most populous Member States. For the data in Table 2 five powers serve the purpose: 0.93, 0.932, 0.935, 0.937, 0.94. The smallest power (0.93) conforms best to the principle of degressive proportionality. Powers larger than 0.93 involve the transfer of a seat from a less populous Member State to a more populous Member State: for 0.932 from Lithuania to Poland, for 0.935 from Poland to United Kingdom, for 0.937 from the Netherlands to Poland, and for 0.94 from Portugal to Italy. The selection of the smallest power is expressed by saying that the most populous Member State realizes "just" 96 seats. An efficient algorithm to determine the power is described in Grimmett et al., note 3; see also Sect. 12.8 of Pukelsheim, note 4. The algorithm is implemented in the free software Bazi (www.uni-augsburg.de/bazi/).

[6] OJ C 326, 26.10.2012, pp. 13–45 (http://www.uni-augsburg.de/bazi/OJ/2012C326p13.pdf).

[7] C. Bertini / G. Gambarelli / I. Stach: Apportionment strategies for the European Parliament. *Homo Oeconomicus* 22, 2005, pp. 589-604.

[8] See, for example, V. Ramírez / A. Palomares / M.L. Márquez: Degressively proportional methods for the allotment of the European Parliament Seats amongst the EU Member States. In: B. Simeone / F. Pukelsheim (Editors): *Mathematics and Democracy – Recent Advances in Voting Systems and Collective Choice.* Berlin, 2006, pp. 205–220. Or W. Słomczyński / K. Życzkowski: Mathematical aspects of degressive proportionality. *Mathematical Social Sciences* 63, 2012, pp. 94-101. Note that the latter authors introduce in their equation (10) a "*base + power*" allocation method which is close to, but not identical with the Power Compromise of the present briefing.

[9] OJ C 227 E, 4.9.2008, pp. 132-138, no. 5 (http://www.uni-augsburg.de/bazi/OJ/2008C227Ep132.pdf).

[10] See Chap. 7 in Pukelsheim, note 4. – The counterpart of the divisor method with upward rounding is the divisor method with downward rounding. The latter is also known as the D'Hondt method. The D'Hondt method is biased in favour of stronger parties at the expense of weaker parties, which explains much of its widespread usage.

[11] 175 082 is 40.3 percent of 434 403.

[12] OJ L 348, 12.12.2016, pp. 27–29 (www.uni-augsburg.de/bazi/OJ/2016L348p27.pdf). See www.uni-augsburg.de/bazi/literature.html#QMV-Pop for links to the QMV population figures prior to 2017.

[13] In repeated decision-making systems the term "a priori decision power" denotes the probability that the participant's vote is critical for adopting an act. For large populations the indirect decision power of a citizen behaves proportionally to the quotient of the decision power of his or her Member State and the square root of the Member State's population figure. See, for example, equation (8) in D. Leech / H. Aziz: The double majority voting rule of the EU Reform Treaty as a democratic ideal for an enlarging Union: An appraisal using voting power analysis. In: M. Cichocki / K. Życzkowski (Editors): *Institutional Design and Voting Power in the European Union*. London, 2010, pp. 59–73. For the double-majority voting rule, the decision powers of the Member States were kindly provided by Dan Felsenthal (Jerusalem) and Dennis Leech (London).

[14] See also Figure 14.1 in F. Pukelsheim: Putting citizens first: Representation and power in the European Union. In Cichocki / Życzkowski, note 13, pp. 235–253 (www.uni-augsburg.de/pukelsheim/2010a.pdf).

[15] W. Słomczyński / K. Życzkowski: Penrose voting system and optimal quota. *Acta Physica Polonica* B 37, 2006, pp. 3133–3143 (chaos.if.uj.edu.pl/~karol/pdf/SZapp06.pdf).

[16] For the Jagiellonian Compromise, the Member States' decision powers were calculated using the program ipgenf on the website *Computer Algorithms for Voting Power Analysis* of Dennis Leech and Richard Leech (homepages.warwick.ac.uk/~ecaae/). However, this specific decision rule makes computers superfluous since a Member State's

decision power is practically equal to the normalized voting weight (=voting weight / total of all voting weights). Sample calculation in Table 8 for Austria: 2 952 / 99 012 = 2.98 percent.

[17] European Parliament resolution of 11 November 2015 on the reform of the electoral law of the European Union (2015/2035(INL)) (www.uni-augsburg.de/bazi/OJ/20xxCyyEpzz.pdf).

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