

Is Brexit an opportunity to reform the European Parliament?

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Executive summary

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- **THE UNITED KINGDOM'S** departure from the European Union will have implications for the European Parliament. Seventy-three of its 751 members are elected in the UK. Brexit offers a political opportunity to reform the allocation of seats to member states.
- **THE EUROPEAN PARLIAMENT** is a highly unequal parliament: large countries are underrepresented while small countries are overrepresented. This is desired in the EU treaties. But the EU treaties also emphasise the importance of equality and equal treatment of citizens by EU institutions. Inequality of representation in the European Parliament has been criticised as reducing its democratic legitimacy. The European Parliament itself has called for increased “electoral equality,” or enhanced equality of representation.
- **WE EXPLORE DIFFERENT** options for reform and their implications for equality of representation and distribution of seats to countries. We do so within the constraints set by the EU treaties.
- **ONE OPTION WOULD** be simply to drop the 73 seats currently occupied by MEPs elected in the UK. However, this would increase the inequality of representation in the European Parliament. We also consider other pragmatic options but they would not yield significantly different outcomes.
- **ALTERNATIVELY, THE ALLOCATION** of MEPs to member states could be reconsidered with a view to reducing the inequality of representation within the constraints set by the EU treaties. We use two measures of inequality and perform a mathematical optimisation.
- **BY ONE MEASURE** of inequality of citizens' representation, the European Parliament would shrink to 639 MEPs. By the other measure, it would shrink to 736 MEPs. Inequality can be reduced by around 25 percent, making the parliament somewhat more comparable to the levels of inequality of representation seen in the British and French national parliaments. The European Parliament would still be twice as unequal, however.
- **WE ALSO CONSIDER** the idea of a transnational list, an option that would require treaty change, and offer an online tool to explore other options that would require treaty change.
- **AT A TIME** of a shrinking EU budget and high levels of scepticism about the legitimacy and efficiency of EU institutions, Brexit offers an opportunity to reform the European Parliament to address some of the criticisms. However, we note that only a change to the EU Treaties would enable changes to make the European Parliament comparable to national parliaments in terms of equality of representation.

1 Introduction

As the United Kingdom leaves the European Union, one issue for the EU to resolve is the implications of the departure for the European Parliament. Currently, 73 members of the European Parliament (MEPs) are elected in the UK, but the UK is likely to have left the EU by the time of the next European elections in 2019. This raises the question of whether these 73 seats should be dropped or reallocated to the remaining 27 EU countries. And if they are to be reallocated, how should it be done? How will the European Parliament change without the UK?

Even before the UK's Brexit referendum, the Council of the European Union in 2013 called on the European Parliament to make a proposal in time for the 2019-24 parliamentary term for the allocation of seats to EU countries *"in an objective, fair, durable and transparent way, translating the principle of degressive proportionality,"*¹ with 'degressive proportionality' meaning that more populated EU countries have more citizens per MEP than their less-populated counterparts. Prior to the UK Brexit vote, the European Parliament itself called for a reform to increase equality of representation².

Brexit offers a unique political opportunity to revive the discussion on the distribution of seats and to reassess the resulting political and geographical balance in the parliament. The current distribution of seats is the result of long political negotiations and represents a compromise. The departure of one of the largest EU countries means there is new opportunity for political compromises on the composition of the European Parliament.

We explore different possible distributions of seats in the European Parliament after Brexit. In particular, we present two options that fulfil the requirements of the EU treaties, in particular on minimum and maximum thresholds and degressive proportionality, but that also aim to achieve the greatest possible equality of representation, as demanded by the European Parliament within the treaty constraints. We analyse the implications of those changes in terms of degressive proportionality, equality of representation, number of seats per country, and possible impact on the share of seats of the political groups in the European Parliament³

2 Why does the allocation of seats to countries matter?

The allocation of European Parliament seats to countries has a number of implications. An obvious point is that different weights for different countries imply different distributions of

1 See Article 4 of 'European Council Decision establishing the composition of the European Parliament', 28 June 2013. Degressive proportionality is required by Article 14 of the Treaty on European Union.

2 The European Parliament itself aims to reinforce the concept of *"citizenship of the Union and electoral equality"*. In its resolution of 11 November 2015, the European Parliament discussed the reform of the electoral law of the EU. It called for *"providing for the greatest possible degree of electoral equality and participation for Union citizens."* See European Parliament resolution of 11 November 2015, P8_TA(2015)0395, 'Reform of the electoral law of the EU', in which the Parliament: *"Decides to reform its electoral procedure in good time before the 2019 elections, with the aim of enhancing the democratic and transnational dimension of the European elections and the democratic legitimacy of the EU decision-making process, reinforcing the concept of citizenship of the Union and electoral equality, promoting the principle of representative democracy and the direct representation of Union citizens in the European Parliament, in accordance with Article 10 TFEU, improving the functioning of the European Parliament and the governance of the Union, making the work of the European Parliament more legitimate and efficient, enhancing the effectiveness of the system for conducting European elections, fostering common ownership among citizens from all Member States, enhancing the balanced composition of the European Parliament, and providing for the greatest possible degree of electoral equality and participation for Union citizens."*

3 We also complement this paper with an online tool that shows how the number of European Parliament seats per EU country would change, depending on different variables.

votes across party groups, because of differing national voting patterns. For example, while 35 percent of Germany's European Parliament seats went to the conservative European People's Party (EPP) group in the 2014 European elections, the EPP secured only 27 percent of seats in France. Assuming voting patterns remain the same, a change in the relative number of seats allocated to France and Germany would have an impact on the strengths of different political groups. Of course, the absence of the UK MEPs by itself will already change the shares of seats held by different groups in the European Parliament. Hix *et al* (2016) document the voting patterns of MEPs from the UK: their departure would immediately change voting patterns.

However, beyond the impact on voting patterns of changes in the allocation of seats, a deeper and more controversial question is how the distribution of seats to countries affects the legitimacy of the European Parliament. With the Lisbon Treaty, the European Parliament has become the parliament that represents EU citizens. But the notion of representing EU citizens seems to be at odds with the principle of degressive proportionality, which gives different weights to EU citizens depending on the country in which they live. Degressive proportionality also appears to be at odds with the basic call of the EU treaties to ensure equality of all citizens and, in particular, that citizens should receive equal attention from EU institutions (Art 9 TEU)⁴. However, degressive proportionality is enshrined in the treaties (Art 14 TEU) so that large countries do not dominate the European Parliament.

The EU treaties are therefore somewhat ambiguous on the question of whether the European Parliament represents primarily EU citizens or citizens of EU states. In other words, the treaties still differentiate between, say, French and Slovenian EU citizens in elections to the European Parliament, while considering that the parliamentarians represent EU citizens and not national citizens with nationally determined preferences. Implicitly, the treaties therefore assume that a French and a Slovenian MEP could decide differently in a vote based on their nationality and not based on political preferences. In line with that reasoning, the European Parliament's former rapporteur for electoral procedure, Andrew Duff, summarised that the European Parliament "*reflects a giant historical compromise between the international law principle of the equality of states and the democratic motto of 'One person, one vote'*" (Duff, 2014).

The constraints in the EU treaties on the allocation of seats to countries are therefore at odds with the principle of equality of representation. It is broadly desired that small member states should have more seats than their population sizes would suggest. Figure 1 on the next page shows the distribution of seats across EU citizens as it is currently implemented, based on the constraints of the EU treaties and current electoral agreements.

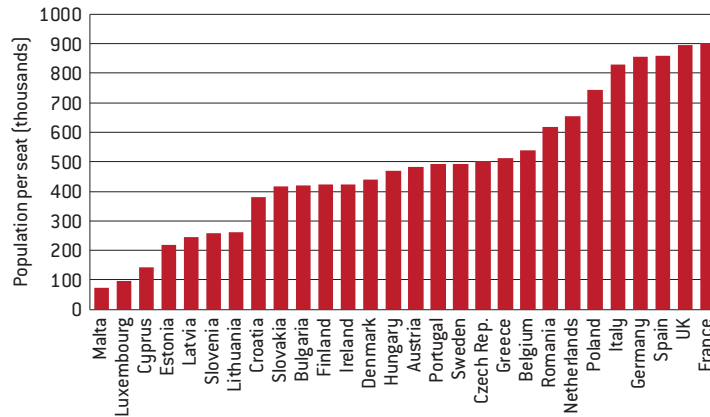
The intellectual and political foundations for the current composition of the European Parliament are given in the European Parliament report by Lamassoure and Severin (2007), which also defines the concept of degressive proportionality. It was revised in a 2013 European Parliament report by Gualtieri and Trzaskowski (2013), in which the 'Cambridge Compromise' is introduced (Grimmett *et al*, 2011, see the next section). The call of the European Parliament for more electoral equality therefore suggests that it increasingly leans towards an interpretation of its role in which the nationality of MEPs matters less as voting patterns are the result of political preferences and not nationality.

The extent of proportionality is also a highly controversial issue in the legal discussion. In a landmark ruling of the German constitutional court (BVerfG, 2009), equality of representation in the European Parliament is explicitly mentioned to not be satisfied, measured against requirements placed on democracy in states. The German court concluded that the EU's "*structural democratic deficit*" cannot be resolved in an association of states and that the European Parliament cannot close this "*structural democratic deficit*". This is not the place to

4 Article 9 of the Treaty on European Union (TEU) says that "*In all its activities, the Union shall observe the principle of the equality of its citizens, who shall receive equal attention from its institutions, bodies, offices and agencies.*" Article 14(2) of the TEU says of the European Parliament that it "*shall be composed of representatives of the Union's citizens.*" However, the same article also specifies the principle of degressive proportionality.

discuss the advantages and shortcomings of the rulings of the German court, but it is important to keep in mind that the Court's decision constrains German institutions in a number of respects, and plays a major role in the constitutional and political debate in Germany and elsewhere on the legitimacy of the European Parliament.

Figure 1: EU countries, population per MEP



Source: Eurostat, European Parliament.

3 Degressive proportionality and the Cambridge Compromise

First introduced into EU primary law with the Lisbon Treaty, the principle of degressive proportionality has seen several revisions and attempts to operationalise the term. Lamassoure and Severin (2007) developed the first adopted definition: “[The European Parliament] considers that the principle of degressive proportionality means that the ratio between the population and the number of seats of each Member State must vary in relation to their respective populations in such a way that each Member from a more populous Member State represents more citizens than each Member from a less populous Member State and conversely, but also that no less populous Member State has more seats than a more populous Member State.”

In 2011, a Symposium of Mathematicians was commissioned by the European Parliament’s Committee on Constitutional Affairs to recommend a mathematical ‘formula’ for the apportionment of seats, the Cambridge Compromise (Grimmett *et al*, 2011). Together with the principal recommendation of the method for apportionment, the commission also advised that the Parliament’s size should be reduced and proposed a new definition of degressive proportionality. The new definition requires that the number of seats allocated to member states be degressively proportional before rounding to whole numbers.

The recommendation was subsequently adopted by the Parliament’s decision of 13 March 2013 resulting in the following formulation, which is currently in force (European Parliament, 2013): “The ratio between the population and the number of seats of each Member State before rounding to whole numbers shall vary in relation to their respective populations in such a way that each Member of the European Parliament from a more populous Member State represents more citizens than each Member from a less populous Member State and, conversely, that the larger the population of a Member State, the greater its entitlement to a large number of seats.”

However, the European Parliament’s Committee on Constitutional Affairs did not adopt

the recommendations of the group of mathematicians that proposed the Cambridge Compromise, but rather opted for a “pragmatic solution”. Instead of following the Cambridge Compromise, the pragmatic solution meant that seats were distributed according to the principle that no state should gain seats and none should lose more than one.

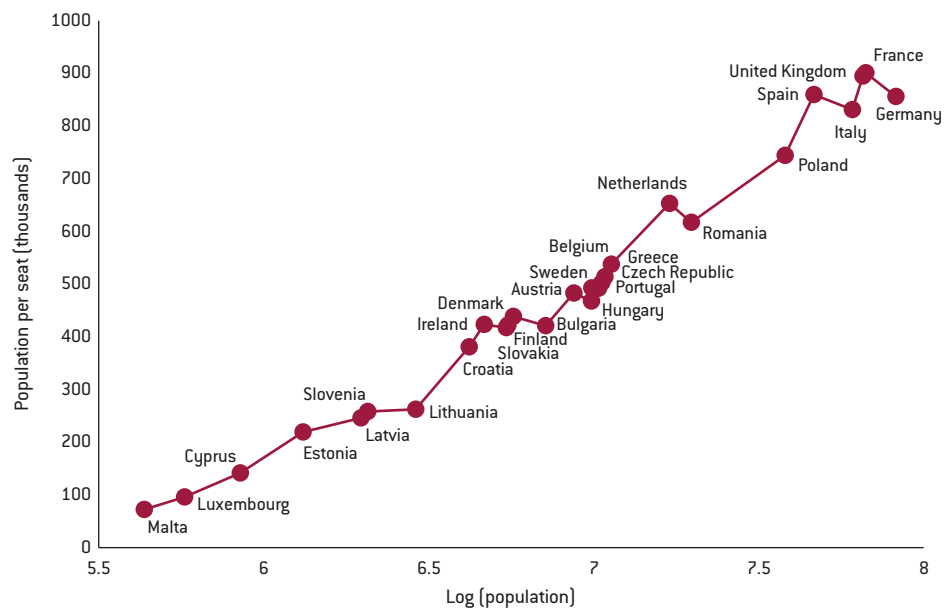
4 The distribution of seats in the European Parliament and in national parliaments

The EU treaties specify the distribution of seats in the European Parliament. The minimum number of seats a country can have is six, and the maximum is 96, with a total of 751 (750 plus a president).

In line with the principle of degressive proportionality, the number of citizens per MEP increases with the size of the country, meaning citizens of smaller EU countries are over-represented relative to their counterparts from large countries. Degressive proportionality thus implies inequality of representation. We define equality of representation to mean that the population per MEP would be the same for all countries.

Figure 2 shows how the principle of degressive proportionality has been implemented. This implementation is the result of a compromise reached on 13 March 2013 (European Parliament, 2013).

Figure 2: Degressive proportionality as currently implemented in the European Parliament



Source: Bruegel based on Eurostat, European Parliament. Note: Population represented per MEP over the logarithm of population.

As Figure 2 shows, the degressive proportionality requirement is broadly fulfilled because the curve slopes upward. However, there are deviations. For example Slovakia has a larger population than Ireland, but a smaller population per MEP than Ireland. However, these deviations are quite small. In many cases, they can be explained by rounding; after all, it is not possible to have half an MEP. But in some instances, the treaty requirements are, in fact, not fulfilled because of the *ad-hoc* nature of the allocation of seats in the compromise of 2013.

But how does the allocation of seats in the European Parliament compare to other legisla-

tures in terms of equality of representation?

Table 1 shows indicators of equality of representation for the European Parliament compared to the US, the UK, Germany, France and Italy (for charts, see the Annex). In this group, the European Parliament is by far the most unequal. When equality of representation is measured using a version of the Gini coefficient⁵ (with a score of zero meaning perfect equality while a score of 100 would imply that all seats go to one country), the European Parliament's score is 17.5 compared to only 2.2 in the US House of Representatives or 3.4 in the Bundestag. France and the UK have the highest Gini coefficients in our group but at about 6 in each case, their values are still only a third of the European Parliament value.

Another measure is the coefficient of malapportionment⁶, which measures the percentage of seats that would need to move in order to achieve equality. On this indicator, the European Parliament scores 14 percent, more than three times the score of the worst performing national parliaments in our sample, which are the UK and France.

Table 1: Equality of representation in selected parliaments

Lower House	Apportionment	Seats	Gini	Malap.
European Parliament (2014)	Pragmatic solution implemented since 2014	751	17.5%	14.37%
US House of Representatives (2016)	One seat per congressional district	435	2.2%	1.42%
German Bundestag (2013)	Mixed system depending on direct and proportional mandates	631	3.4%	2.47%
UK House of Commons (2015)	One seat per constituency	650	6.1%	4.25%
Italy Chamber of Deputies (2013)	Semi-proportional system	630	2.7%	1.74%
France National Assembly (2012)	Two round system with one seat per constituency	577	6.4%	4.54%

Source: Bruegel based on European Parliament, Eurostat, Destatis, Bundestag, US Census, UK The Electoral Commission, Ministero Dell'Interno (Italy), Ministère de l'Intérieur (France). Note: Malap. = coefficient of malapportionment.

5 Reform options in the framework of the EU treaties

The 73 MEPs from the UK could be reallocated in various ways, and reallocation should ideally be done in time for the 2019 European Parliament elections.

The simplest approach would be to reduce the number of MEPs by 73. After all, the UK will have left the EU, the EU budget will have shrunk and parliamentarians cost taxpayers money. We calculate that the cost per MEP to the taxpayer is €554,881 per year⁷. In line with

5 The Gini coefficient is used by a number of authors in the literature that assesses equality of representation of parliaments. See for example: Rose (2012), Taylor and Véron (2014).

6 This indicator is also frequently used in the literature, see for example, Charvát (2015), Samuels and Snyder (2001). Other indicators can be used but they do not change the broad message (see the Annex).

7 About 22 percent of the European Parliament's 2017 expenditures are appropriated to MEPs' expenses, including salaries, costs for travel, offices and the pay of personal assistants (*General budget of the European Union for the financial year 2017*, 2016). We are thus only considering variable costs and not the costs for the EU parliament's general operations.

this approach, the European Parliament would shrink to 678 MEPs. The number of seats per country would remain unaltered, which may be politically the easiest solution. However, the Gini coefficient and the indicator of malapportionment would both increase, worsening the European Parliament’s problem of inequality of representation.

A second option would be to distribute the 73 seats to all remaining countries while keeping within the constraint of a national maximum of 96. This would dramatically increase the inequality of representation. Evenly distributing seats following the current proportions of MEPs per country would lead to an increase in inequality.

Finally, all or some seats could be redistributed to try to minimise inequality within the constraints of the treaties (Box 1 describes how the mathematical optimisation is structured to achieve this reduction in inequality). By following this approach, the optimal number of MEPs would be 639 or 736, depending on how inequality of representation is measured. If such an approach were pursued, the Gini index would fall from 17.5 to 14.2, and the malapportionment index would fall from 14.4 to 10.5, a decline of more than a quarter.

Table 2: Comparison of possible allocations in terms of Gini and malapportionment coefficients

Lower House	Apportionment	Seats	Gini	Malap.
European Parliament	Pragmatic solution implemented since 2014	751	17.5%	14.4%
Different scenarios for the European Parliament:				
Redistribute only 73 seats, no treaty change required	Dropping of 73 MEPs	678	↑18.3%	↑14.8%
	Distribute seats equally between countries	751	↑22.6%	↑18.2%
	Distribute seats following the current proportions of MEPs per country	751	↑19.7%	↑15.6%
	Distribute seats to increase representativeness	751	↓14.8%	↓10.6%
Cambridge Compromise, no treaty change required	Current EP size	751	↓15.1%	↓10.8%
	EP size to minimize Gini	639	↓14.2%	↓11.3%
	EP size to minimize malapportionment	736	↓14.6%	↓10.5%
Change of TEU Art. 14(2) required	Allocate 73 seats to a transnational list following Duff (2011)	751	↓16.5%	↓13.3%

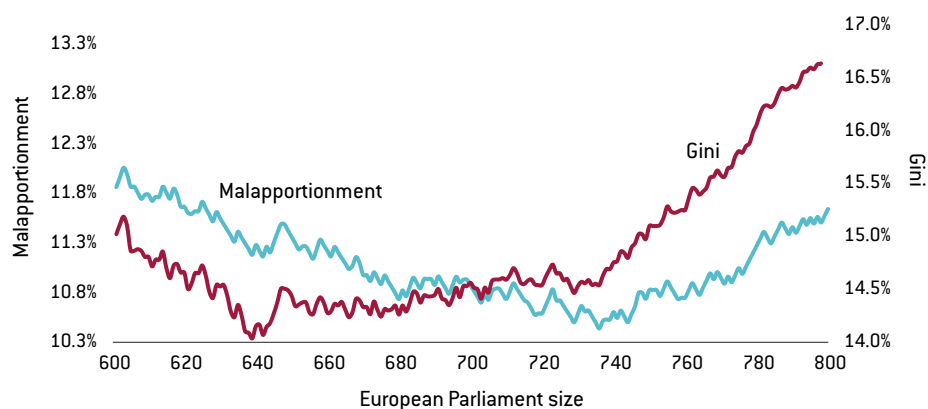
Source: Bruegel based on European Parliament, Eurostat.

Box 1: Choosing the optimal size of the European Parliament

The core recommendation of the Cambridge Apportionment Meeting was a method of distributing seats to member states termed ‘Base+prop method’ (Grimmett *et al*, 2011). In a first stage, a fixed base number of seats is allocated to each country, ie five seats. In the second stage, the remainder is distributed proportionally to population sizes with upwards rounding. The recommended method is a compromise that follows the principle of equality among states with the base number of seats, and the principle of equality among citizens by the proportional part.

For a given minimum and maximum number of permissible seats per state, the method can be used to determine a parliament size that minimises inequality. While a large parliament would mean that several countries hit the upper limit of seats, a low total number of MEPs would lead to more overrepresentation of countries at the lower limit. Figure 3 shows this U-shaped relationship with the percentage of malapportionment and the Gini index for each parliament size using the ‘Base+prop’ method.

Figure 3: Inequality of representation as a function of the size of the European Parliament while applying the Cambridge Compromise formula



Source: Bruegel.

The parliament sizes that would minimise the Gini score and malapportionment are 639 and 736, respectively. The Gini is more sensitive to under/over-representation of individual countries, in particular in the middle of the distribution, while malapportionment quantifies the percentage of seats that would need to move to achieve a proportional distribution. We also used other measures of inequality of apportionment but the optimisation results were either close to the malapportionment measure or the Gini coefficient measure (see the Annex).

Table 3 shows the number of seats currently allocated to the EU countries except the UK, and the allocations at optimal parliament sizes: first with a total of 639 seats (which would minimise inequality as measured by the Gini coefficient), and second with a total of 736 seats (which would minimise the degree of malapportionment).

Table 3: Allocation of seats to EU countries according to the Cambridge Compromise, with Parliament sizes of 639 and 736

	European Parliament without UK			Cambridge Compromise 639 seats			Cambridge Compromise 736 seats				
	Pop. %	Seats	%	Seats	%	Diff.	Pop. / seats	Seats	%	Diff.	Pop. / seats
Germany	18.5%	96	14.2%	96	15.0%		855854	96	13.0%		855854
France	15.0%	74	10.9%	79	12.4%	+ 5	843818	96	13.0%	+ 22	694392
Italy	13.6%	73	10.8%	73	11.4%		831035	89	12.1%	+ 16	681635
Spain	10.4%	54	8.0%	57	8.9%	+ 3	814709	70	9.5%	+ 16	663406
Poland	8.5%	51	7.5%	47	7.4%	- 4	807813	58	7.9%	+ 7	654607
Romania	4.4%	32	4.7%	27	4.2%	- 5	731851	33	4.5%	+ 1	598787
Netherlands	3.8%	26	3.8%	24	3.8%	- 2	707463	29	3.9%	+ 3	585487
Belgium	2.5%	21	3.1%	18	2.8%	- 3	627214	21	2.9%		537612
Greece	2.4%	21	3.1%	17	2.7%	- 4	634913	20	2.7%	- 1	539676
Czech R.	2.4%	21	3.1%	17	2.7%	- 4	620814	20	2.7%	- 1	527692
Portugal	2.3%	21	3.1%	17	2.7%	- 4	608314	20	2.7%	- 1	517067
Sweden	2.2%	20	2.9%	16	2.5%	- 4	615689	19	2.6%	- 1	518475
Hungary	2.2%	21	3.1%	16	2.5%	- 5	614405	19	2.6%	- 2	517394
Austria	2.0%	18	2.7%	15	2.3%	- 3	580031	18	2.4%		483360
Bulgaria	1.6%	17	2.5%	13	2.0%	- 4	550291	15	2.0%	- 2	476919
Denmark	1.3%	13	1.9%	12	1.9%	- 1	475604	13	1.8%		439019
Finland	1.2%	13	1.9%	12	1.9%	- 1	457276	13	1.8%		422101
Slovakia	1.2%	13	1.9%	12	1.9%	- 1	452188	13	1.8%		417404
Ireland	1.0%	11	1.6%	11	1.7%		423503	12	1.6%	+ 1	388211
Croatia	0.9%	11	1.6%	10	1.6%	- 1	419067	11	1.5%		380970
Lithuania	0.6%	11	1.6%	9	1.4%	- 2	320951	9	1.2%	- 2	320951
Slovenia	0.5%	8	1.2%	8	1.3%		258024	8	1.1%		258024
Latvia	0.4%	8	1.2%	8	1.3%		246120	8	1.1%		246120
Estonia	0.3%	6	0.9%	7	1.1%	+ 1	187992	7	1.0%	+ 1	187992
Cyprus	0.2%	6	0.9%	6	0.9%		141387	7	1.0%	+ 1	121188
Luxembourg	0.1%	6	0.9%	6	0.9%		96042	6	0.8%		96042
Malta	0.1%	6	0.9%	6	0.9%		72401	6	0.8%		72401
Total	100%	678	100%	639	100%	- 39		736	100%	58	

Source: Bruegel based on Eurostat, European Parliament. Note: European Parliament apportionment of seats for EU27 at 1) current distribution, 2) Cambridge Compromise method with a total of 736 and 3) Cambridge Compromise method with a total of 639 seats. The table shows share of population, number of seats in each scenario, share of seats in the EP, difference to current allocation and population-to-seats ratio. Population-to-seats ratios which are not strictly increasing with population are italicised.

In a European Parliament of 27 countries with 639 seats, France, Italy and Estonia would gain seats, eight countries would be unaffected and 16 would receive fewer seats. Although Germany's number of MEPs would not change, its share of the European Parliament total would increase by 2.2 percentage points (see Table A1 in the Annex for current allocation). Romania and Hungary would lose the most, with five fewer seats each. However, Romania's share of the seats in the European Parliament would be unchanged, and Hungary's share would be 0.3 percentage points lower. The ratio of population to seats would be the same or would fall in three instances. This is in accordance with the current definition of degressive proportionality, which requires the proportion of population to seats to increase before rounding. The apparent deviation from degressive proportionality is thus only a result of the fact that there can be no shared MEPs across countries.

This 639-seat option would decrease the inequality of representation in the European Parliament by almost 20 percent. At the extremes, France, which currently has the largest number of people per MEP, has 12.4 times more people than the country with the lowest number of MEPs, Malta. In a 639-seat parliament, that multiple would fall to 11.8. The minimisation of inequality of representation as measured by the Gini coefficient would thus lead in particular to an adjustment for the countries in the middle of the range – while the constraint of a minimum of six and a maximum of 96 seats prevents adjustments for the smallest and largest countries. In other words, the EU treaty limits the reduction of inequality that can be achieved. Nevertheless, the reduction of inequality would lead to a Gini coefficient that would at least be somewhat closer to the levels of inequality of representation in the French and UK parliament, even though it would still be more than twice as large than in both cases.

Distributing seats according to the Cambridge Compromise in a Parliament with 736 seats, a third of countries would gain and seven countries would receive a smaller number of seats. France, as the currently most underrepresented country, would receive the largest number of additional MEPs (22) followed by Italy (16) and Spain (16). The countries that would lose seats are Portugal, Sweden, Greece, the Czech Republic, Hungary, Bulgaria and Lithuania. The losses in terms of shares of total European Parliament seats would be below 0.3 percentage points compared to current shares.

In this option, the 73 UK seats can, thus, be used to increase the equality of representation of citizens in the European Parliament – reducing the measure of malapportionment – while limiting the loss of seats to a minimum. In three cases – Greece, Hungary and Sweden – the ratio of population to seats would not increase for more populous countries. The EU treaties again limit the adjustment for the smallest and for the largest member states. Nevertheless, one can achieve a reduction of the extent of malapportionment that makes the European Parliament somewhat more comparable to the French and UK parliament, even though inequality would still be more than twice as large, respectively.

Finally, we simulate the Andrew Duff proposal to create a transnational list to which the 73 UK seats would be allocated. This would require EU treaty change and is therefore unlikely to be implemented but, since it is discussed in Brussels, we want to show its effects on inequality and malapportionment. As Table 2 shows, the option would also substantially decrease inequality. However, we note that if treaty change is an option, much more significant changes in electoral equality could be achieved. The interested reader can explore various options that would drop various EU treaty constraints via an online tool that accompanies this Policy Contribution. However, we consider the debate in this area to be a long-term one.

In political terms, changes in seat distribution could lead to changes in the relative shares of political groups in the European Parliament (Table 4). Without the 73 British MEPs, the Socialists and Democrats group (S&D) would lose out while the European People's Party (EPP) would gain. Assuming current country-level voting patterns, it is possible to estimate the distribution of seats between political groups in a European Parliament of 639 or 736 seats. The EPP would gain most, with increases of 2.9 and 2.7 percentage points, respectively. The centrist Alliance of Liberals and Democrats for Europe group (ALDE) and the Greens group would benefit from a smaller parliament in which Germany has a greater weight.

Table 4: Political groups in the European Parliament assuming national percentages of votes based on the 2014 elections

Political Group	Current		Brexit: Drop 73 MEPs		Cambridge Compromise, 639 seats		Cambridge Compromise, 736 seats	
European People's Party (EPP)	217	28.9%	217	32.0%	203	31.8%	232	31.6%
Progressive Alliance of Socialists and Democrats (S&D)	189	25.2%	169	24.9%	159	24.9%	183	24.9%
European Conservatives and Reformists (ECR)	74	9.9%	53	7.8%	49	7.7%	56	7.6%
Alliance of Liberals and Democrats for Europe (ALDE)	68	9.1%	67	9.9%	63	9.9%	72	9.7%
United Green Left (GUE/NGL)	52	6.9%	51	7.5%	49	7.7%	56	7.7%
Greens/European Free Alliance (Greens/EFA)	50	6.7%	44	6.5%	42	6.6%	47	6.4%
Europe of Freedom and Direct Democracy (EFDD)	44	5.9%	24	3.5%	23	3.6%	28	3.8%
Europe of Nations and Freedom (ENF)	39	5.2%	38	5.6%	38	5.9%	46	6.2%
Non-attached members	18	2.4%	15	2.2%	13	2.0%	16	2.1%
Total	751	100%	678	100%	639	100%	736	100%

Source: Bruegel. Note: Distribution of seats across political groups 1) currently, 2) without the 73 British MEPs, 3) at a Cambridge Compromise allocation with 736 seats and 4) with 639 seats. The number of seats in the latter two scenarios are approximated using voting patterns from the 2014 parliamentary election.

6 Conclusions

The departure of the UK from the EU offers a political opportunity to change the number and allocation of seats in the European Parliament. The European Parliament has itself called for a reassessment and for greater equality of representation. A straightforward option would be to drop the 73 seats currently allocated to the UK – this would also be a cost saving option, but it would increase electoral inequality. Another option would be to share out some of the seats between EU countries. Our two scenarios for optimal redistribution would reduce inequality of representation in the European Parliament, as measured by the Gini coefficient and the malapportionment coefficient, within the constraints of the EU treaties. In these scenarios, the number of European Parliament seats would shrink by 112 or 15.

We consider it important to reform the parliament to increase equality of representation with a view to increase its legitimacy as a parliament representing EU citizens equally. At a time when the EU budget will shrink and scepticism about EU institutions is high, the EU should carefully explore our options. It should also consider whether a smaller parliament would be more efficient. However, within the constraints of the Treaties, only limited increases of equality are possible so that our reform options will not fully settle the debate. With a treaty change, equality of representation could be achieved that would render the

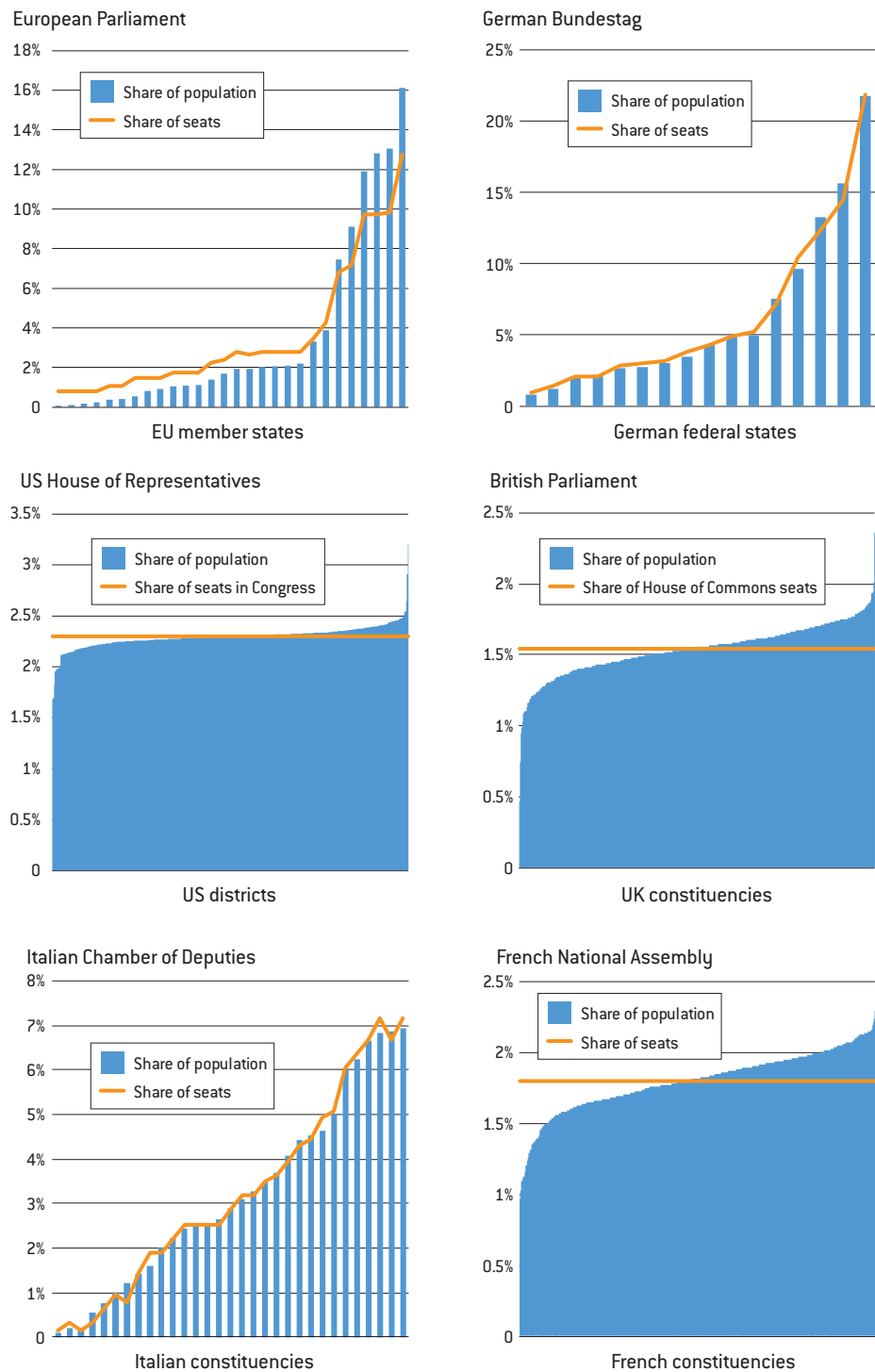
European Parliament more comparable to a lower house in a national parliamentary context. But we consider such treaty change and debate unlikely, which is why we have not presented such options in this paper. We hope that our computations and the online tool will contribute to transparency in the upcoming debate on the European Parliament, which no doubt will be highly controversial.

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Annex

Figure A1: The European Parliament in comparison to other parliaments



Source: Bruegel.

Table A1: Allocation of seats in the European Parliament

Country	Pop. %	Seats	%	Pop./seats
Germany	16.1%	96	12.8%	855,854
France	13.1%	74	9.9%	900,833
United Kingdom	12.8%	73	9.7%	895,085
Italy	11.9%	73	9.7%	831,035
Spain	9.1%	54	7.2%	859,971
Poland	7.4%	51	6.8%	744,455
Romania	3.9%	32	4.3%	617,499
Netherlands	3.3%	26	3.5%	653,043
Belgium	2.2%	21	2.8%	537,612
Greece	2.1%	21	2.8%	513,977
Czech Republic	2.1%	21	2.8%	502,564
Portugal	2.0%	21	2.8%	492,444
Sweden	1.9%	20	2.7%	492,551
Hungary	1.9%	21	2.8%	468,118
Austria	1.7%	18	2.4%	483,360
Bulgaria	1.4%	17	2.3%	420,811
Denmark	1.1%	13	1.7%	439,019
Finland	1.1%	13	1.7%	422,101
Slovakia	1.1%	13	1.7%	417,404
Ireland	0.9%	11	1.5%	423,503
Croatia	0.8%	11	1.5%	380,970
Lithuania	0.6%	11	1.5%	262,596
Slovenia	0.4%	8	1.1%	258,024
Latvia	0.4%	8	1.1%	246,120
Estonia	0.3%	6	0.8%	219,324
Cyprus	0.2%	6	0.8%	141,387
Luxembourg	0.1%	6	0.8%	96,042
Malta	0.1%	6	0.8%	72,401
Total	100%	751	100%	

Measures of electoral inequality

Inequality in the apportionment of seats quantifies the deviation from proportional representation. Taagepera and Grofman (2003) discuss the multitude of existing indicators for disproportionality and evaluate these by practically and theoretically desirable criteria such as simplicity or response to transfers. This Policy Contribution uses the voting Gini and the Loosemore and Hanby (1971) indicator for malapportionment to estimate the degree of inequality in the European Parliament and compare it to other parliamentary bodies.

The Loosemore-Hanby indicator for malapportionment has been widely applied to measure inequality of representation and offers an intuitive interpretation. It measures the proportion of seats which would need to be redistributed to achieve perfect equality (Samuels and Snyder, 2001). The formula is:

$$D=1/2 \sum |s_i - v_i|$$

Where s_i stands for the percentage of all seats allocated to country i and v_i for the percentage of the overall population. A drawback of this indicator is that it does not capture transfers between overrepresented countries or between underrepresented countries as these would not change the total difference in seats to proportional representation. The voting Gini, as specified in Fry and McLean (1991), improves upon the Loosemore-Hanby indicator in terms of capturing transfers at the expense of being harder to interpret.

The minimisation of inequality with respect to the European Parliament size – described in Box 1 – has been repeated for six other indices of malapportionment provided by Marcelino (2016). The results are robust as each indicator either implies an optimal parliament size of

639 or 739. The class of indicators including Loosemore-Hanby specify a linear penalty for differences to proportionality while the class including the Gini have a larger penalty for deviations.

