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THE IMPACT OF BREXIT ON THE MEMBER STATES VOTING POWER
IN THE COUNCIL OF THE EUROPEAN UNION

Abstract

The Treaty of Lisbon introduced a new system of weighting votes in the Council, which radically departs from the principles based on which the distribution of votes between the Member States of the EU was made for more than half a century. One of the main arguments for the introduction under the Lisbon Treaty of the so-called double majority system of weighting votes in the Council was the relative ease of its adaptation in the event of accession of new Member States. From the beginning, however, it gave rise to doubts whether the accession of Turkey to the EU, as a state with a large population, could occur without a substantial modification of the system. The possibility of leaving the EU by one of its largest Member States was not taken into account, either.

The paper analyses the potential impact of Brexit on the voting power of Member States in the EU Council, in the case of adopting decisions by the qualified majority of votes. The leading hypothesis of the paper assumes that the fact of leaving the European Union by Great Britain and the new method of determining the population of EU Member States for the purposes of making decisions in the EU Council leads to another transfer of formal voting power to the benefit of countries with the largest populations. The aim of the paper is also to determine if the voting rules in the Council of the European Union may be recognized as democratic and just? In order to answer this question the current voting system of double majority will be compared with the so called square root system.

The analysis is based on the assumption that in the EU Council there is a two level decision-making system in which indirect voting power of a citizen equals to product of direct voting power of a citizen and voting power of his representative in a council. The division of citizens among constituencies is random from the point of view of issues which may be the subject of a decision in the Council.

On 29 March 2017, the UK government officially launched the procedure for an EU Member State's withdrawal from the EU. This was the consequence of the referendum of 23 June 2016, in which the citizens of the United Kingdom of Great Britain and Northern Ireland voted for the country's withdrawal from the European Union. Although the referendum itself was only of non-binding, consultative nature, it led to the initiation of the process of leaving the EU under Article 50 of the Treaty on European Union.

This event, unprecedented in the history of European integration so far, poses a big challenge for the EU. At the same time, the UK’s withdrawal from the EU will have a significant impact on the weighted voting system in the Council and the voting power of Member States in that institution.

On 1 November 2014, the Treaty of Lisbon introduced a new weighted voting system in the Council (the so-called double majority system)¹. One of the main arguments for the introduction of the change was the relative ease of its adjustment in the case of accession of new Member States. From the outset, however, it raised doubts as to whether Turkey's accession to the EU, as a state with a big population, could take place without substantial modification of this system. The possibility of withdrawal from the EU of one of the largest member states was not taken into account, either.

In the double majority system, when a decision in the Council is taken on the initiative of the European Commission or the High Representative of the Union for Foreign Affairs and Security Policy, a qualified majority constitutes at least 55% of the members of the Council (at least 16 in the case of its full composition) representing the participating Member States, the total population of which is at least 65% of the population of these countries. At the same time, a blocking minority includes a minimum number of Council members representing more than 35% of the population of participating countries, plus one additional member.² If the Council does not act on the initiative of the European Commission or the High Representative of the Union for Foreign Affairs and Security Policy, the majority threshold for most countries is higher and support of at least 72% of the members of the Council is required. However, such situations are extremely rare and, therefore, have not been included in the further analysis.

¹ Under the Protocol on Transitional Provisions, between 1 November 2014 and 31 March 2017 each Member State could request that the Nice weighted voting system be applied for the adoption of an act by qualified majority. *Protocol (No 36) on transitional provisions*, Art. 3(2), (O.J. UE, C 326, 26.10.2012) modified by *Act concerning the conditions of accession of the Republic of Croatia and the adjustments to the Treaty on European Union, the Treaty on the Functioning of the European Union and the Treaty establishing the European Atomic Energy Community*, Art. 2, (O.J. UE, L 112, 24.04.2012).

² *Consolidated version of the Treaty on European Union*, Art.16(4), (O.J. UE, C 202, 7.06.2016); *Consolidated version of the Treaty on the Functioning of the European Union*, Art. 238(2), (O.J. UE, C 202, 7.06.2016).

Following the entry into force of the Treaty of Lisbon, the evolution of the compromise culture in the Council can be observed. In the case of decisions taken by qualified majority, objections or abstentions by states unable to block the decision are considered excessive and contradictory to the prevailing political culture. There is also an informal rule that, under the ordinary legislative procedure, the whole Council should defend the common position reached in this institution before the European Parliament³. At the same time, qualified majority voting has become the default method of adopting decisions in the Council⁴ and the Treaty of Lisbon has significantly expanded the scope of use of this method of voting⁵. As a consequence, the ability of Member States to form coalitions within the Council in order to influence the outcome of this institution's decision-making process has increased.

The leading hypothesis of this work assumes that the UK’s withdrawal from the European Union will lead to another, after the introduction of the double majority system, significant flow of votes to the members of the Council with the largest population.

Research questions and applied methodology

The verification of the leading hypothesis requires finding answers to several research questions.

Question 1: How will the voting power of the states in the Council change in the double majority system after the UK’s withdrawal from the EU?

Only seven of the countries in which the population is larger than the community average will remain in the EU after Brexit. It can, therefore, be presumed that in the case of the measurement of the voting power in the Council using the Normalized Banzhaf Index⁶ (NBI) and the Preventive Power Index⁷ (PPI) the voting power of the member states with the largest population will increase, as support from them is crucial for the building of winning and blocking coalitions. The absence of the UK will make it more difficult to find a coalition partner with the right voting weight. At the same time, since the number of states required to

³ S. Novak, *Qualified majority voting from the Single European Act to present day: an unexpected permanence*, Notre Europe, Study & Research 88, November 2011, pp. 18-19

⁴ *Consolidated version of the Treaty on European Union*, Art.16(3), (O.J. UE, C 202, 7.06.2016).

⁵ V. Miller, C. Taylor, *The Treaty of Lisbon: Amendments to the Treaty on European Union*, “House of Commons Research Paper” 2008, No. 09, pp. 1-85.

⁶ F. Banzhaf, *Weighted Voting Does Not Work: A Mathematical Analysis*, “Rutgers Law Review” 1965, Vol. 19, No. 2, pp. 317-343.

⁷ J.S. Coleman, *Control of Collectivities and the Power of a Collectivity to Act*, in: Liberman B. (ed.) *Social Choice.*, London 1971, pp. 269-300; reprinted in J.S. Coleman, *Individual Interests and Collective Action: Selected Essays*, London 1986, pp. 192-225.

adopt a Council decision by qualified majority will be reduced from 16 to 15, it should be assumed that the voting power of the four members of the Council with the smallest population is likely to weaken.

Question 2: Will the weighted voting system, after the UK's withdrawal from the EU, be closer to a system in which the indirect voting power of all residents is equal?

Assuming that the UK's withdrawal will increase the voting power of countries with the largest population, while at the same time diminishing the voting power of the smallest members of the Council, Brexit should bring us closer to the system where the voting powers of all citizens in the EU are equal. However, the difference between these systems can still be quite significant.

Question 3: What impact will the UK's withdrawal from the EU have on the ability of Member States to build strictly minimally blocking coalitions⁸ with a relatively small number of members?

It should be borne in mind that, when drafting a legislative initiative, the European Commission seeks to shape it in such a way so as to increase the likelihood of adopting it under a particular legislative procedure. To this end, it can also use other competences conferred upon it and the information advantage it has⁹. As a result, it is difficult to build up in the Council a blocking coalition consisting of a large number of states, especially in the case of the dual majority voting system in force in the Council. In an official voting it is extremely rare for a decision to be contested by raising objections or abstaining from voting by more than three members of the Council¹⁰. Moberg reports that during the negotiations regarding during the negotiations regarding the reform of the system of weighting votes in the Lisbon Treaty, Member States were not so much interested in the ability to build winning coalitions, or in the value of mathematical indices defining the ability to block decisions, but in a chance to create by individual countries a blocking coalition, consisting of relatively few

⁸ A blocking coalition is strictly minimal when none of the possible subcoalitions have a voting power equal to it, i.e. it cannot guarantee the blocking of a decision in a given voting body.

⁹ M.A. Pollack, *The Engines of European Integration. Delegation, Agency and Agenda Setting in the EU*, Oxford 2003; J. Tallberg, *Leadership and Negotiation in the European Union*, New York 2006.

¹⁰ F.M. Häge, *Coalition- Building and Consensus in the Council of the European Union*, „British Journal of Political Science” 2013, vol. 43(3), pp. 481-504; D. Heisenberg, *The Institution of “Consensus” in the European Union: Formal Versus Informal Decision-Making in the Council*, „European Journal of Political Research” 2005, 44(1), pp. 65–90; M. Kleinowski, *Konsensualne negocjacje czy głosowanie, kontestowanie aktów prawnych w Radzie UE*, „Studia Europejskie”, No. 4(64), pp. 27-50; M. Mattila, J.-E. Lane, *Why Unanimity in the Council? A Roll Call Analysis of Council Voting*, „European Union Politics” 2001, Vol. 2(1), pp. 31–52; M. Mattila, *Contested Decisions: Empirical Analysis of Voting in the European Union Council of Ministers*, „European Journal of Political Research” 2004, vol. 43(1), pp. 29–50; F. Hayes-Renshaw, W. Van Aken, H. Wallace, *When and Why the EU Council of Ministers Votes Explicitly*, „Journal of Common Market Studies” 2006, Vol. 44(1), pp. 161–94.

members¹¹. This knowledge helps to answer two questions frequently faced by members of the Council: Who do you need to win for the coalition, in order to avoid decisions unfavourable for yourself? Which countries should be won to prevent the creation of a blocking coalition? The coefficient of blocking power, known as share of blocking minority was used by EU politicians and their advisors in the negotiations of the Lisbon Treaty. It is computed by dividing member state weight by the blocking threshold¹². In connection with the fact that it is very unlikely to build a blocking coalition consisting of a large number of states, the key to its creation is the EU population criterion. Therefore, it can be assumed that the ability of small and medium-sized states to form strictly minimally blocking coalitions will be reduced after Brexit, as the UK's withdrawal from the EU will significantly impede the winning over of coalition partners with a sufficiently numerous population.

It is also intended to analyse how the ability of Council members to develop strictly minimally blocking coalitions will change as a result of Brexit in the case when a European Commission's initiative will be supported by two of the five Member States with the largest population. If the support of a legislative initiative by some Member States significantly reduces the likelihood of blocking it in the Council, then it may be assumed that this will have an impact on the selection and aggregation of interests at the stage of draft preparation by the European Commission.

The Regulation of the European Parliament and of the Council on demographic statistics in Europe has normalized the way of measuring the population of individual EU Member States for the needs of qualified majority voting in the Council¹³. It imposes on each country the obligation to provide the European Commission (Eurostat) with data on the population at the Member State level on 31 December within eight months of the end of the reference year. In practice, the population of Member States, for the purposes of qualified majority voting, is defined as the number of persons residing in an EU country at the time of reference. It is, therefore, the number of residents, and not citizens of the Member State concerned, and it also includes nationals of other countries, including those who do not have EU citizenship. Following the entry into force of Regulation (EU) No. 1260/2013, the practice of updating the annex to the Council's Rules of Procedure specifying the population of individual Member States has been ceased, followed by the direct application of Art. 4 of the

¹¹ A. Moberg, *The Weight of Nations. Four papers on the institutional negotiations in the EU 1996–2007*, Malmö 2014, pp. 66–89.

¹² A. Moberg, *Is the Double Majority Really Double? The Second Round in the Debate of the Voting Rules in the EU Constitutional Treaty*, Working paper, No. 290, Real Instituto Elcano, Madrid 2007, pp. 64–89.

¹³ *Regulation (EU) No 1260/2013 of the European Parliament and of the Council of 20 November 2013 on European demographic statistics*, (O.J. EU, L 330, 10.12.2013).

mentioned regulation. Computer simulations, the results of which have been presented in the article, were based on official Eurostat data¹⁴.

Mathematical voting power indices are intended to determine *a priori* the impact of a voting principle in a given voting body on the distribution of voting power among its members. These indices, as Linder put it, "model the voting system as an «abstract shell», without taking into consideration the voters' preferences, the range of issues over which a decision is taken, or the degree of affinity between the voters"¹⁵. As a consequence, the application of the n-person game theory of weighted voting to the analysis of the voting power of states in the Council is met with accusations of insufficient empiricity, the cognitive and prospective value of such studies being questioned¹⁶. This analysis assumes a normative approach under which all variables, except the voting principle itself, should be omitted. As a consequence, this leads to the overestimation of the voting power of those players that tend to occupy extreme positions, and to the underestimation of the voting power of those entities the preferences of which are central to the distribution of all players' preferences. It must be borne in mind that proposing their original indices to measure voting power, Shapley and Shubnik, as well as Coleman, emphasized that they should be applied primarily in the designing of formal solutions establishing decision-making bodies¹⁷, i.e. serve to compare different voting systems.

In order to analyse the impact of the UK's withdrawal on the voting power of the states in the Council, two mathematical indices will be used: Normalized Banzhaf Index (NBI) and Preventive Power Index. Their selection is dictated by the fact that they were repeatedly used to analyse the weighted voting system in the Council. This will make it possible to make comparisons with the previous studies in this field. The computer simulations on the basis of which the NBI and PPI will be determined for the members of the Council will be based on the n-person game theory of weighted voting, in particular on the assumption that voting for or against a submitted proposal is, for all decision makers, random and equally probable, and

¹⁴ Eurostat, *Usually resident population on 1 January* (last update 05.10.2016),

http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_urespop&lang=en [18.07.2017].

¹⁵ I. Lindner, *The power of a collectivity to act in weighted voting games with many small voters*, "Social Choice and Welfare" 2008, Vol. 30(4), p. 593.

¹⁶ M. Albert, *The voting Power Approach: Unresolved Ambiguities*, "European Union Politics" 2004, Vol. 5(1), pp. 139-146; M. Albert, *The Voting Power Approach: Measurement without Theory*, "European Union Politics" 2003, Vol. 4(3), pp. 351-366; G. Garret, G. Tsebelis, *More Reasons to Resist the Temptation to Apply Power Indices to the EU*, "Journal of Theoretical Politics" 1999, vol. 11(3), pp. 331-338; G. Garret, G. Tsebelis, *Why Resist the Temptation to Apply Power Indices to the EU*, "Journal of Theoretical Politics", Vol. 11(3), pp. 291-308.

¹⁷ L.S. Shapley and M. Shubik, *A Method for Evaluating the Distribution of Power in a Committee System*. *The "American Political Science Review"* 1954, Vol. 48(3), pp. 787-792; J.S. Coleman, op.cit.

the decision on how to vote is taken independently of each other. As a consequence, it should also be assumed that the formation of any possible coalition of players is equally likely.

The Normalized Banzhaf Index indicates the probability that a player (e.g. an EU Member State) will find themselves in a position where it will depend on their position whether the proposal receives the majority support needed for its adoption by the voting body.

The Power to Prevent (Block) Action Index (Preventive Power Index-PPI) indicates what is the chance of a member of a given voting body to block a decision. This index *de facto* determines the share of the winning coalitions that a given player is a critical member of in the total number of all winning coalitions.

The ability of Member States to block decisions will be analysed from the perspective of their ability to build strictly minimally blocking coalitions. Firstly, it will be examined how the UK’s withdrawal from the EU will affect the ability of individual states to form small strictly minimally blocking coalitions in the Council. To this end, for each state, their share in the total number of strictly minimally blocking coalitions numbering between 4 and 8 members for EU-28 and EU-27 will be calculated.

Analysing the impact of Brexit on the ability of Council members to build strictly minimally blocking coalitions in a situation where the European Commission's initiative has been unequivocally supported by two of the five countries with the largest population requires a departure from the Bernoulli model and, above all, the abandonment of the assumption that voting “for” or “against” the initiative by each player is equally likely, and that they decide on how to vote independently of each other.

In the case of an indirect analysis of the voting power of residents of individual Member States, it was assumed that a two-level decision-making system operates in the Council. The indirect voting power of each resident of a Member State is equal to the product of the direct voting power of the resident and the voting power of their representative in the Council. To determine the direct voting power of a resident, it is assumed that each member state is a separate constituency and that an EU resident belongs only to one constituency (EU Member State) and independently expresses their opinion on the initiative considered in the Council, as if they were doing so in a poll in which they have one vote and can vote only "for" or "against" the proposed initiative. At the same time, it is assumed that there is no significant correlation between residing in a particular state (affiliation with a constituency) and preference with regard to the issues that may become the subject matter of a decision in the Council. Representatives of a Member State in the Council vote "for" or "against" an initiative independently of one another, guided solely by the outcome of the poll in a given state. In this

case, the impact of each resident on the outcome of voting in the Council is equal, if the voting power of the Member States is proportional to the square root of population¹⁸. Thus constructed a weighted voting system may, however, lead to the occurrence of the phenomenon of the "dictatorship" of the minority, where there is a strong correlation between the preferences of the populations within the states with the simultaneous clear polarization of the positions of the populations of the individual member states¹⁹. In such a situation, the voting power of the members of the Council should be proportionate to the population²⁰.

However, it is unlikely that the phenomenon of the dictatorship of the minority would occur in the Council, if in the double majority system the population criterion was replaced by the criterion of the square root of population. It would still be necessary to get the support of 55% of the Council members, and the share of 22 EU Member States (excluding the six with the largest population) in the square root of the EU population is just over 53%. Thus, in practice, we are dealing with two ideal types, neither of which occurs fully in political reality. We should also agree with Kirsch that the correlation between the preferences of residents or citizens in particular constituencies varies over time and depending on the issues being resolved, while the weighted voting system in a particular institution usually operates over a long period of time²¹. Hence, it seems acceptable to assume that there is no strong correlation of preferences among residents of EU Member States.

To determine how much of each country's voting power in the Council is proportional to the square root of population, the ratio of voting power to the square root of population was determined. The ratio was calculated using the formula $(\eta S)/(Hs)$ ²² where:

η – the number of swings of a given player (member state) in a given voting system;

H – the sum of swings of all players;

s – the square root of the player's population;

S – the sum of square roots of the populations of all players in the council.

If, for a Member State, the ratio assumes a value of exactly 1, then its voting power is directly proportional to the square root of population (number of residents). On the other hand, when such a value occurs for all members of the Council, then we are dealing with a

¹⁸ About the *Penrose square root law*, cf. About the *Penrose square root law*, cf. D.S. Felsenthal, M. Machover, *The Measurement of Voting Power. Theory and Practice, Problems and Paradoxes*, Cheltenham, Northampton, 1998, pp. 63-78; L.S. Penrose, *The Elementary Statistics of Majority Voting*, "Journal of the Royal Statistical Society" 1946, vol. 109(1).

¹⁹ *Ibidem*, p. 71.

²⁰ W. Kirsch, *On Penrose's square-root law and beyond*, "Homo Oeconomicus" 2007, Vol. 24(3-4), 357-380, pp. 357-380; D.S. Felsenthal, M. Machover, *op.cit.*, p. 68-72.

²¹ W. Kirsch, *op.cit.*, 373.

²² D.S. Felsenthal, M. Machover, *op.cit.*, p. 166.

voting system in which the indirect voting power of all residents of the Member States is equal. Where the ratio assumes a value less than or equal to 1, then the respective voting power of a given state is underestimated or overestimated in relation to the square root of its population.

In order to answer the question of how much of a voting system in the Council is convergent with the so-called equal impact system and what changes in this regard will result from the UK’s withdrawal from the EU, we will determine the average absolute deviation of the ratios of voting power to the square root of the population of individual EU states from the value of this ratio equalling 1 (full proportionality).

We shall use the following formula:

$$D = \frac{\sum_{i=1}^n |x_i - 1|}{N}$$

where:

x_i – ratio of voting power to the square root of population of an individual player

N – the total number of the players

The D ratio indicates how much, on average, the voting power of the states in the analysed voting system is absolutely deviated from the weighted voting system in which the indirect voting power of all residents of those states is equal (assuming the above-mentioned assumptions are fulfilled). The higher the value of the D ratio, the higher the average absolute deviation of the voting power ratio to the square root of population of all players and, therefore, the analysed voting system is more divergent from the voting system where the voting power of all citizens in the EU is equal.

The change of the voting power of Council members as a result of the UK’s withdrawal from the EU

The introduction, under the Treaty of Lisbon, of a new weighted voting system in the Council, the so-called double majority system, has led to a significant flow of voting power towards the four EU Member States with the largest population, the support of which became crucial to the formation of a winning or blocking coalition. Accordingly, as indicated in Table 1, the UK’s withdrawal from the EU has led to significant changes in the voting power of other Member States as measured using the NBI and the PPI.

Table 1. The change of the voting power of the states in the Council for decisions adopted by qualified majority after the UK’s withdrawal from the EU.

State	EU 28 states		EU 27 after Brexit		Change relative to EU 28 states			
	NBI	PPI	NBI	PPI	NBI change	NBI change (%)	PPI change	PPI change (%)
Germany	0,1025	0,7480	0,1198	0,7897	0,0173	16,84%	0,0417	5,57%
France	0,0844	0,6157	0,0995	0,6563	0,0152	17,96%	0,0406	6,59%
United Kingdom	0,0829	0,6049	—	—	—	—	—	—
Italy	0,0787	0,5739	0,0918	0,6055	0,0132	16,75%	0,0315	5,50%
Spain	0,0618	0,4512	0,0762	0,5023	0,0143	23,18%	0,0510	11,31%
Poland	0,0507	0,3698	0,0649	0,4280	0,0142	28,12%	0,0583	15,77%
Romania	0,0375	0,2739	0,0400	0,2638	0,0025	6,55%	- 0,0102	-3,72%
Netherlands	0,0349	0,2549	0,0371	0,2450	0,0022	6,33%	- 0,0100	-3,92%
Belgium	0,0289	0,2112	0,0302	0,1992	0,0013	4,34%	- 0,0121	-5,72%
Greece	0,0285	0,2076	0,0296	0,1953	0,0012	4,10%	- 0,0123	-5,94%
Czech Republic	0,0281	0,2051	0,0292	0,1926	0,0011	3,92%	- 0,0125	-6,09%
Portugal	0,0280	0,2043	0,0291	0,1918	0,0011	3,88%	- 0,0125	-6,13%
Sweden	0,0277	0,2018	0,0287	0,1891	0,0010	3,69%	- 0,0127	-6,30%
Hungary	0,0275	0,2006	0,0285	0,1878	0,0010	3,61%	- 0,0128	-6,38%
Austria	0,0264	0,1924	0,0271	0,1790	0,0008	2,98%	- 0,0134	-6,95%
Bulgaria	0,0248	0,1810	0,0253	0,1667	0,0005	1,95%	- 0,0143	-7,88%
Denmark	0,0233	0,1703	0,0235	0,1553	0,0002	0,92%	- 0,0150	-8,81%
Finland	0,0231	0,1685	0,0233	0,1534	0,0002	0,73%	- 0,0151	-8,98%
Slovakia	0,0230	0,1681	0,0232	0,1530	0,0002	0,68%	- 0,0152	-9,02%
Ireland	0,0223	0,1627	0,0223	0,1471	0,0000	0,06%	- 0,0156	-9,59%
Croatia	0,0218	0,1592	0,0217	0,1433	- 0,0001	-0,37%	- 0,0159	-9,97%
Lithuania	0,0205	0,1496	0,0202	0,1330	- 0,0003	-1,63%	- 0,0166	-11,11%
Slovenia	0,0197	0,1435	0,0192	0,1264	- 0,0005	-2,53%	- 0,0171	-11,92%
Latvia	0,0196	0,1428	0,0191	0,1256	- 0,0005	-2,64%	- 0,0172	-12,02%
Estonia	0,0189	0,1380	0,0183	0,1204	- 0,0006	-3,39%	- 0,0175	-12,71%
Cyprus	0,0184	0,1345	0,0177	0,1167	- 0,0007	-3,97%	- 0,0178	-13,23%
Luxembourg	0,0182	0,1325	0,0174	0,1145	- 0,0008	-4,32%	- 0,0179	-13,55%
Malta	0,0180	0,1314	0,0172	0,1134	- 0,0008	-4,52%	- 0,0180	-13,73%

Source: Own calculations.

In the case of voting power measured using the NBI, Brexit leads to its significant flow towards the five members of the Council with the largest population, in particular Poland and Spain. Changing the weighted voting system will also be beneficial for Romania and the Netherlands, but to a much lesser extent than in the case of the states with the largest populations. In turn, for the six Member States with the smallest populations, the NBI assumes a slightly lower value. In the case of the other members of the Council, a very slight increase in their voting power can be observed.

Following the UK's withdrawal from the EU, only in the case of Germany, France, Italy, Spain and Poland there will be an increase in the ability to block decisions measured by

the PPI. This clearly indicates that after Brexit the importance of these states in the process of building blocking coalitions will increase even further. Theoretically, the change is most beneficial for the governments of Warsaw and Madrid, but their ability to block decisions will continue to diverge considerably from the opportunities that Italy, France and, above all, Germany will obtain. It is hard to imagine the possibility of adopting a decision against the strong opposition of the government in Berlin and their taking intensive steps to build a blocking coalition. The ability to block a decision in the Council will decrease for all other states. At the same time, there is a relationship between population and a change in the PPI. With the decline in the population of a state, the value of the PPI decreases to a larger extent as a result of the UK's withdrawal from the EU. This indicates that the key criterion of weighing votes when creating blocking coalitions will be the EU population. Given that it is difficult to build a blocking coalition consisting of a large number of Member States in the Council, the disproportion in the ability to block a decision between Germany, France and Italy and the remaining members of the Council may be even greater in practice. The analysis of the impact of Brexit on the ability of Member States to build small strictly minimally blocking coalitions will make it possible to capture the scale of this phenomenon.

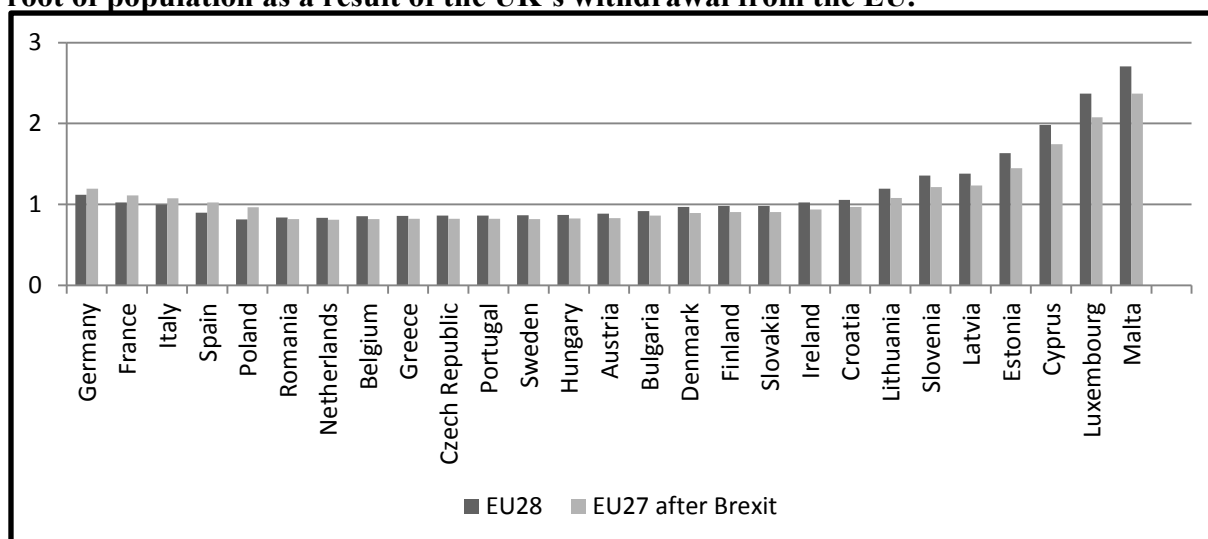
The impact of Brexit on the indirect voting power of EU residents in the Council

As a result of the UK's withdrawal, the EU population will decrease by more than 65,340,000 people, from 510,860,000 to 445,519,000 inhabitants, which, coupled with the flow of voting power between the Member States, will have a clear impact on the indirect voting power of EU residents in the Council and the convergence of the voting system in this institution with the so-called equal impact system.

Chart 1 presents how the ratio of the voting power of individual Council members (as measured using the NBI) to the square root of their population will change. Assuming that the population of states is determined by the number of people residing in a given country (residents), and not its citizens, we can observe that Brexit will lead to an even greater overestimation of Germany's voting power in relation to the voting system where the voting power of all citizens in the EU is equal. In the case of France and Italy, for which, with 28 Member States, the ratio of voting power to the square root of population assumed a value close to 1, the UK's withdrawal leads to a marked overestimation of the voting power of these states and, consequently, of the indirect voting power of their residents. In turn, the voting power of Spain and Poland becomes approximately proportional to the square root of their population. In the case of all other countries, the indirect voting power of the population is

reduced, including the degree of overestimation of the voting power of the seven members of the Council with the smallest populations is lowered.

Chart 1. The change in the ratio of the voting power of Member States to the square root of population as a result of the UK’s withdrawal from the EU.



Source: Own calculations.

At the same time, Brexit will result in the underestimation of the indirect voting power of Croatian residents and will increase the underestimation of the voting power of states with a population of less than 20 million, and more than 4 million.

To answer the question about the extent to which the double weighted voting system in the Council is convergent with the voting system where the voting power of all citizens is equal, based on the data in Table 1 and Table 2, the *D* ratio was determined for the EU consisting of 28 Member States, as well as after the UK’s withdrawal from it.

For EU-28 the *D* ratio assumes the value of 0.27, which means that the weighted voting system in force in the Council differs significantly from the system where the voting power of all citizens is equal. For comparison, in the case of the Nice system used in the past, it was only 0.131. As a result of Brexit, the value of the *D* ratio will be slightly reduced, but it will still be difficult to recognize the weighted voting system in the Council as consistent with the equal impact system. In connection with the fact that a mean is a measure sensitive to the occurrence of extreme values of a studied feature, the *D* ratio was calculated in the set of analysed data after excluding 15% of the statistical units of the studied general populations (EU states) with extreme values (2 states for which the voting power ratio to the square root of population was to the largest extent deviated from the value of 1, and 2 states for which the deviation was the smallest). In this case, for 28 EU states, the *D* ratio assumes the value of 0.187, while after the UK’s withdrawal from the EU it amounts to 0.184. On the other hand,

in the same situation for the Nice system, with 28 Member States, the D ratio amounted to 0.12.

Table 2. The convergence of the weighted voting system in the Council with the system where the voting power of all citizens is equal for EU-28 and EU-27.

UE Member State	EU-28					EU-27				
	Population	Square root of the population	Number of swings (η)	Ratio of voting power to the square root of population (A)	A-1	Population	Square root of the population	Number of swings (η)	Ratio of voting power to the square root of population (A)	A-1
Germany	82064489	9058,9	22733139	1,194	0,120	82064489	9058,9	13862450	1,194	0,194
France	66661621	8164,7	18712511	1,109	0,023	66661621	8164,7	11602800	1,109	0,109
United Kingdom	65341183	8083,4	18384157	1,074	0,015	–	–	–	–	–
Italy	61302519	7829,6	17443533	1,022	-0,005	61302519	7829,6	10781652	1,074	0,074
Spain	46438422	6814,6	13714289	0,965	-0,102	46438422	6814,6	8923652	1,022	0,022
Poland	37967209	6161,8	11237887	0,819	-0,186	37967209	6161,8	7620132	0,965	-0,035
Romania	19759968	4445,2	8326020	0,811	-0,164	19759968	4445,2	4667788	0,819	-0,181
Netherlands	17235349	4151,5	7748574	0,816	-0,167	17235349	4151,5	4315106	0,811	-0,189
Belgium	11289853	3360,0	6420399	0,821	-0,147	11289853	3360,0	3514460	0,816	-0,184
Greece	10793526	3285,4	6310049	0,820	-0,143	10793526	3285,4	3457710	0,821	-0,179
Czech Republic	10445783	3232,0	6232589	0,823	-0,139	10445783	3232,0	3398484	0,820	-0,180
Portugal	10341330	3215,8	6209199	0,819	-0,138	10341330	3215,8	3392302	0,823	-0,177
Sweden	9998000	3162,0	6132746	0,824	-0,134	9998000	3162,0	3320350	0,819	-0,181
Hungary	9830485	3135,4	6095624	0,831	-0,132	9830485	3135,4	3311336	0,824	-0,176
Austria	8711500	2951,5	5846208	0,861	-0,116	8711500	2951,5	3143488	0,831	-0,169
Bulgaria	7153784	2674,7	5499738	0,894	-0,082	7153784	2674,7	2951190	0,861	-0,139
Denmark	5700917	2387,7	5175260	0,904	-0,032	5700917	2387,7	2735522	0,894	-0,106
Finland	5465408	2337,8	5122592	0,906	-0,022	5465408	2337,8	2710090	0,904	-0,096
Slovakia	5407910	2325,5	5109810	0,936	-0,019	5407910	2325,5	2700556	0,906	-0,094
Ireland	4664156	2159,7	4943536	0,966	0,022	4664156	2159,7	2591314	0,936	-0,064
Croatia	4190669	2047,1	4837930	1,080	0,055	4190669	2047,1	2535384	0,966	-0,034
Lithuania	2888558	1699,6	4546652	1,212	0,194	2888558	1699,6	2352344	1,080	0,080
Slovenia	2064188	1436,7	4361382	1,234	0,355	2064188	1436,7	2231102	1,212	0,212
Latvia	1968957	1403,2	4340184	1,445	0,381	1968957	1403,2	2220220	1,234	0,234
Estonia	1315944	1147,1	4192994	1,745	0,632	1315944	1147,1	2125120	1,445	0,445
Cyprus	848319	921,0	4087880	2,075	0,981	848319	921,0	2059548	1,745	0,745
Luxembourg	576249	759,1	4026282	2,368	1,368	576249	759,1	2019018	2,075	1,075
Malta	434403	659,1	3994488	2,706	1,706	434403	659,1	2000204	2,368	1,368
Σ	510860699	99010,00	221785652			445519516	90267,5	116543322		
D			0,27					0,24		
D-15%			0,187					0,184		

Source: Own calculations.

The impact of Brexit on the ability of Member States to build small strictly minimally blocking coalitions

Due to the specific nature of the decision-making process in the Council, the political culture prevailing in the EU legislature, and the actions of facilitators in the form of the European Commission, the President of the European Council and the rotating presidency, it is difficult to form a blocking coalition consisting of a relatively large group of states on the forum of this institution. Table 3 presents how often individual EU states are an indispensable member of small strictly minimally blocking coalitions in the Council, and to what extent this will change after the Brexit.

Table 3. The participation of EU states in strictly minimally blocking coalitions in the Council, numbering from 4 to 8 members.

State	EU 28					EU 27				
	The number of coalition members					The number of coalition members				
	4	5	6	7	8	4	5	6	7	8
Germany	71,9%	66,2%	66,5%	51,3%	42,1%	85,9%	57,8%	50,1%	36,7%	26,6%
France	56,6%	39,4%	39,0%	39,6%	38,0%	61,33%	37,3%	42,2%	44,5%	41,9%
United Kingdom	54,0%	44,6%	38,3%	39,5%	38,7%	—	—	—	—	—
Italy	49,3%	35,3%	35,2%	38,1%	40,2%	47,05%	54,1%	36,9%	34,2%	36,8%
Spain	41,1%	21,4%	21,6%	28,6%	33,2%	23,43%	39,8%	47,6%	47,8%	44,0%
Poland	29,8%	37,8%	26,7%	24,6%	23,5%	21,33%	23,5%	25,8%	36,0%	43,2%
Romania	7,9%	30,0%	25,8%	29,0%	31,7%	13,14%	18,6%	27,6%	29,4%	33,8%
Netherlands	6,6%	24,4%	28,9%	27,3%	32,0%	11,62%	30,4%	23,2%	27,9%	32,7%
Belgium	5,0%	19,8%	22,8%	29,3%	30,7%	10,10%	13,1%	26,3%	27,3%	32,1%
Greece	5,0%	17,6%	24,5%	29,0%	30,5%	9,90%	12,2%	24,3%	28,3%	33,0%
Czech Republic	5,0%	17,1%	22,9%	28,8%	31,1%	9,33%	16,3%	24,1%	27,8%	31,8%
Portugal	5,0%	17,0%	22,5%	28,5%	31,0%	9,33%	15,5%	24,5%	28,5%	32,6%
Sweden	4,6%	18,0%	23,2%	28,4%	30,5%	8,95%	20,4%	22,7%	28,5%	33,1%
Hungary	4,6%	17,3%	23,4%	28,2%	30,5%	8,95%	19,6%	22,4%	28,8%	33,1%
Austria	4,3%	15,7%	23,9%	28,8%	30,8%	8,76%	16,3%	18,5%	29,8%	31,8%
Bulgaria	4,3%	11,1%	23,3%	25,4%	31,9%	7,81%	18,8%	20,3%	27,4%	30,7%
Denmark	4,0%	10,9%	18,2%	24,3%	31,3%	6,86%	11,8%	22,9%	26,0%	31,4%
Finland	4,0%	10,3%	18,2%	24,6%	30,8%	6,86%	10,4%	23,4%	25,3%	32,0%
Slovakia	4,0%	10,2%	18,1%	24,7%	30,8%	6,67%	12,0%	22,8%	25,5%	31,9%
Ireland	4,0%	9,0%	15,8%	23,1%	29,7%	6,10%	11,6%	20,6%	25,0%	31,1%
Croatia	3,6%	9,0%	14,9%	22,5%	28,5%	5,90%	10,6%	18,3%	24,3%	30,7%
Lithuania	3,6%	5,3%	11,9%	18,4%	26,6%	5,71%	8,4%	13,7%	20,0%	26,1%
Slovenia	3,6%	3,7%	9,2%	15,0%	23,2%	4,76%	10,0%	11,1%	17,4%	23,4%
Latvia	3,6%	3,4%	8,7%	14,8%	22,7%	4,76%	9,4%	10,9%	17,0%	22,8%
Estonia	3,6%	1,9%	6,8%	10,8%	17,8%	4,00%	8,2%	7,4%	13,6%	18,6%
Cyprus	3,6%	1,3%	4,3%	7,7%	13,6%	3,81%	6,1%	5,6%	9,8%	14,3%
Luxembourg	3,6%	1,2%	3,2%	5,5%	10,4%	3,81%	4,5%	3,9%	7,2%	11,2%
Malta	3,6%	1,0%	2,4%	4,2%	8,2%	3,81%	3,3%	3,1%	5,9%	9,1%

Source: Own calculations.

It should be noted that after the UK's withdrawal it will be very difficult to build a four-state blocking coalition without the support of Germany, which, in the case of almost 86% of such coalitions, is an indispensable member of such coalitions. At the same time, the percentage of strictly minimally blocking coalitions (SMBs) with the participation of this state, numbering from 5 to 8 members, is clearly reduced. This does not mean, however, that Germany's ability to build blocking coalitions decreases since the number of four-state SMB coalitions with its participation increases more than twofold (from 434 to 902), and it should be borne in mind that the total number of possible coalitions in the Council after Brexit will be reduced by half. Thus, Germany's ability to build four-state, and so the smallest possible blocking coalitions will significantly increase, thus compensating for the reduction of ability in this respect in the case of coalitions with a higher number of members. This is probably the result of a large population of this country, together with a significant decrease in the total population of the EU after the UK's withdrawal from it. The situation is similar in France, with the difference that its ability to form four-state coalitions increases slightly less than in the case of Germany. After Brexit, the number of four-state blocking coalitions in the Council possible to be built by the government in Paris will increase slightly less than twofold, from 342 to 644. France will also benefit with regard to the formation of SMB coalitions numbering from 6 to 8 members. In turn, the Italians will create SMB coalitions consisting of 5 states more easily. After the UK's withdrawal from the EU, it will be more difficult for Spain to form four-state blocking coalitions, but at the same time its ability in this respect in the case of coalitions consisting of from 5 to 8 members will increase. In the case of Poland, Brexit means the definite weakening of the ability to create SMB coalitions consisting of 4 or 5 states, since it will become harder to win over coalition partners with the sufficient population potential and, thus, the need to form blocking coalitions consisting of more members will arise. In turn, states with populations between 7 and 20 million will be more likely to become potential coalition partners in the smallest blocking coalitions.

Table 4 illustrates how the actual threshold of the number of states needed to adopt a decision in the Council on the initiative of the European Commission changes in a situation where opposition is expressed by 2 selected states with the highest population. In the case of EU 28 facing the opposition of any two states from among Germany, France, Italy, Spain and Poland, it is possible to create a winning coalition consisting of 16 states. However, in the absence of support for the initiative by Germany and France, it is by far the most difficult.

Table 4. The actual threshold of the number of states for QMV adopted decisions in the Council on the initiative of the European Commission in the case of opposition of selected states.

States opposing the initiative	EU 28		EU 27 after Brexit	
	Minimum number of states in the winning coalition	Number of minimum winning coalitions with the smallest possible number of members	Minimum number of states in the winning coalition	Number of minimum winning coalitions with the smallest possible number of members
Germany, France	16	87	20	10
Germany, Italy	16	980	18	5
Germany, Spain	16	44535	15	19
Germany, Poland	16	141672	15	2658997
France, Italy	16	48717	15	23
France, Spain	16	265586	15	9417
France, Poland	16	432545	15	52535
Italy, Poland	16	522717	15	111184
Italy, Spain	16	375147	15	30533
Spain, Poland	16	639089	15	381713

Source: Own calculations.

After the UK’s withdrawal from the EU, it will be very difficult to create a winning coalition facing the opposition of Germany and France or Germany and Italy. This means that while preparing a legislative initiative, the European Commission will have to take into account even more the preferences of the three EU Member States with the largest population, and above all Germany. As a consequence, Brexit will lead in this respect to a more pronounced imbalance between the five Member States with the largest population. In the case of absence of support for a legislative initiative of the European Commission on the part of Germany, France and Italy, the creation of a winning coalition will become practically impossible, since all other members of the Council, i.e. 24 states, would have to participate in it.

Conclusions

The conducted analysis confirms the truthfulness of the hypothesis put forward at the beginning. The UK's withdrawal from the EU will lead to a flow of voting power measured using the NBI primarily towards the five Member States with the largest population, especially Germany. Brexit will increase the ability to block decisions, as measured by the PPI, by the five members of the Council with the largest population and, at the same time, lower it for all other states. There is a clear correlation here, according to which the decline in the PPI value in percentage terms increases with the decline in the population of the state.

Considering the possibility of blocking decisions in the Council from the perspective of the ability to build small strictly minimally blocking coalitions, it can be stated that the UK's withdrawal from the EU will be decidedly unfavourable for Poland, despite the fact that the voting power of the government in Warsaw, as measured by the PPI and NBI, has increased to the greatest extent. At the same time, the possibility of creating small blocking coalitions by Germany and, to a lesser extent, France, will increase significantly. It will also be decidedly more difficult to adopt a QMV decision in the Council against the position of Germany and France or Germany and Italy, and Brexit will lead to the breaking of the relative equality that has existed between the EU states with the largest population.

As a result of Brexit, there will be a clear overestimation of the indirect voting power of German and French residents, while underestimating the indirect voting power of residents of 15 countries. The weighted voting system in the Council for QMV decisions will be deviating from the system where the voting power of all citizens is equal to a significant extent.

It can be said that as a result of the UK's withdrawal from the EU, the importance of the population criterion in the building of blocking and winning coalitions within the Council will increase. The position of the five countries with the largest population, including Germany, France and Italy, will to an even larger extent determine the area within which a compromise in the negotiations conducted in the Council will be possible.