

How Additional Exit Affects the European Union's Power Distribution

Dóra Gréta Petróczy¹, Mark Francis Rogers², and László Á. Kóczy³

¹ Corvinus University of Budapest

`dora.petroczy@stud.uni-corvinus.hu`,

² Fazekas Mihály Secondary School of Budapest

`mark.francis.rogers@icloud.com`

³ Centre for Economic and Regional Studies, Hungarian Academy of Sciences, and
Keleti Faculty of Business and Management, Óbuda University

`koczy@krtk.mta.hu`

Abstract. After Brexit debates on an own EU-leaving referendum arose in the Czech Republic and the Netherlands too. In this paper, firstly we analyse the possible impacts of the Czech Republic's exit from the EU. Then we observe how the exit of any member state from the union would affect the power distribution of the member states within the EU. From the impacts of a possible leaving we inspect one factor: how the power distribution changes in the Council of the European Union. Because the Treaty of Lisbon specified the decision-making to the number of members and the population, an exit of a member state does not invoke the renegotiation of the voting weight system. Using the Shapley-Shubik power index, we calculated the power of the member states both with and without the member who might leave the union. Because the actual budget changes in case a member state leaves the union, we adjusted the new power indexes with the change in the budget caused by the leaving of the member state. We found a pattern connected to a change of the threshold of the required member states and the change in power distribution. An exit which causes a change to the member state threshold of the Council of the European Union benefits large, an exit which does not cause such a change benefits small member states.

Keywords: European Union, Council of the European Union, qualified majority voting, power indices

1 Introduction

Parallel to Brexit, the idea of leaving the European Union became a subject of important political debates in other member states as well. In countries such as the Netherlands and the Czech Republic, the question of leaving the European Union has become central in political debates. According to a poll by Eurobarometer in 2015, the scepticism towards the EU was the highest in Greece (81%), Cyprus (72%), Austria (65%), France (65%), Germany (63%), the United Kingdom (63%) and the Czech Republic (63%). Although it might be worth inspecting several political and economic effects of a possible exit from the European

Union, in this paper similarly to Kóczy (2016) we inspect one aspect: how the power distribution changes in the Council of the European Union. The Council of the European Union, often referred to as the Council of Ministers is the institute that serves the purpose of representing the governments of the members states. It accepts EU law and synchronises the policy of the EU. Along with the European Parliament, the Council of the European Union is the main decision-making institute of the European Union. Every member state is represented by an individual. The difference of size among the member states appears in the weighted qualified majority voting. Pursuant to the Treaty of Lisbon, a voting is successful if at least 55% of the members states and 65% of the population of the EU support the question. Such a recreation of the weights enable us to forecast how the power distribution changes if one country leaves the European Union.

2 Methodology

We followed the methodology of Kóczy (2016), who used the Shapley-Shubik power index to measure the change of power distribution in the Council of the European Union after Brexit. The Shapley-Shubik index (1954) is one of the most known power indexes, which uses the Shapley value (1953) for simple games. Using Shapley-Shubik index for determining power in the Council of European Union is widespread (Herne - Nurmi, 1993; Widgrén, 1994). Voters arrive in a random order, and when a coalition turns winning the full credit is given to the last arriving, pivotal player. A player's power is specified by the proportion of orders when it plays a pivotal role.

The index shows that if a decision is made, what probability a particular player has in being instrumental in making that decision. Formally, for any simple voting game v player i 's Shapley-Shubik index in game v is as follows:

$$\sum_{S \subseteq N \setminus \{i\}} \frac{s!(n-s-1)!}{n!} v'_i(S)$$

where $s = |S|$.

Translate this into politics and voting about the spending of a budget, and the index shows the probability of that the spending of a euro (or a billion) was according to the interests of this particular player. While the model is clearly a simplification, a power index shows the percents of a given budget that the individual voters spend according to their interests.

We have used data from Eurostat (2014) for populations and IOP-Indices of Power (Bräuninger and König, 2005) to calculate Shapley-Shubik indices for the countries.

3 Results

Kóczy (2016) showed that if the United Kingdom leaves the European Union composed of 28 member states, the smallest member states' power index decrease

the most due to Brexit. With the United Kingdom being a part of the European Union, they have more power with it than without it.

In this paper, we handle Brexit as it has already happened, therefore we do the further calculations with a European Union consisting of 27 member states. We calculated the change of power distribution made by any country's exit. We use the Czech Republic as an example, because the EU-sceptical sentiment has become stronger in this country. We found that in this case, the power index of the small countries increase, and the power index of the large countries such as France, Spain, Poland, Italy and Germany slightly decrease. Those who would win the most from a Czexit are Malta, Luxembourg, Cyprus and Estonia.

Notice that this is the direct opposite of the effect of Brexit. The inverted impact is due to the fact that we need 15 countries in the case of both 27 and 26 member-states in order to make a successful voting. However, due to the the exit of the Czech Republic, the population threshold significantly decreases. As a result of this, the small countries earned a greater role.

Felsenthal and Machover (2003) elaborate the difference between two useful terminologies: I and P-power. By P-power they mean voting power conceived of a voter's expected share of a fixed prize given to the winning coalition. By I-power they mean voting power conceived of as a voter's potential impact on the result of divisions of the decision-making body: whether policies proposed are adopted or rejected. The Shapley–Shubik index is based on the notion of P-power. For this reason, we need to take into account that an exit of a country causes a change in the budget. When a country leaves, its payment to the EU budget ceases. The others do not share the same cake as before. Taking this into account, we corrected the power index ratio by the fraction (original budget - the payment of the leaving country)/(original budget). In the case of the Czech Republic, this is 0.9016. Figure 1 shows the budget-adjusted change in power indices versus the member state populations.

We also inspected what happens if another country leaves the European Union. We had very similar results. The power index of the small countries highly increased. However, in case of the big countries we got significantly different results.

In the case of Germany's exit, only the small countries' and Poland's power index increased. The other countries all lost power. The results concerning Poland are especially interesting. If one of the four large countries (Germany, France, Italy and Spain) leave, Poland is much better off than other countries similar to Poland in population size. In all four cases its power index increases despite the other remaining big countries' power index decreases.

Calculations of another country leaving the 26-member EU, for instance, if the Czech Republic leaves after Germany show a very similar pattern to Brexit. This can be elucidated by the fact that as the number of member states decrease from 26 to 25, the Council of the European Union's required number of supporting member states for successful voting changes from 15 to 14. In this case the small

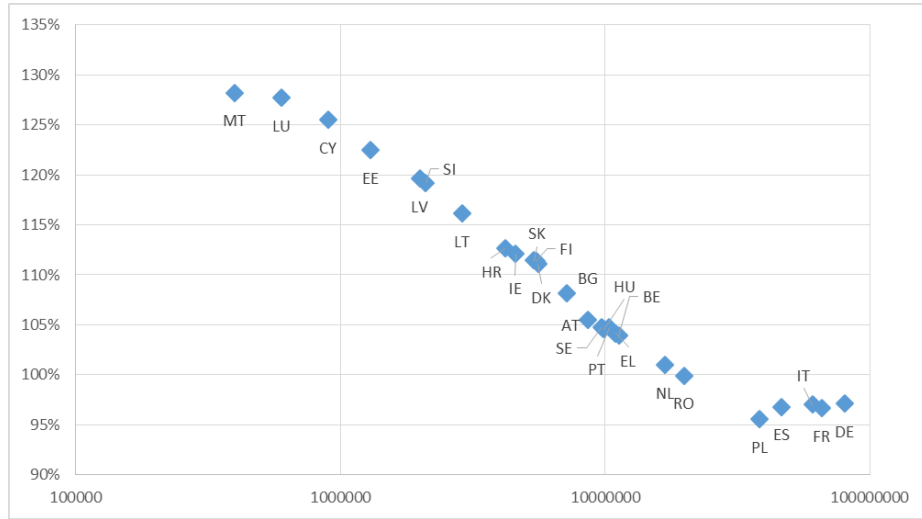


Fig. 1. Adjusted change in power due to Czexit versus populations (logarithmic scale)

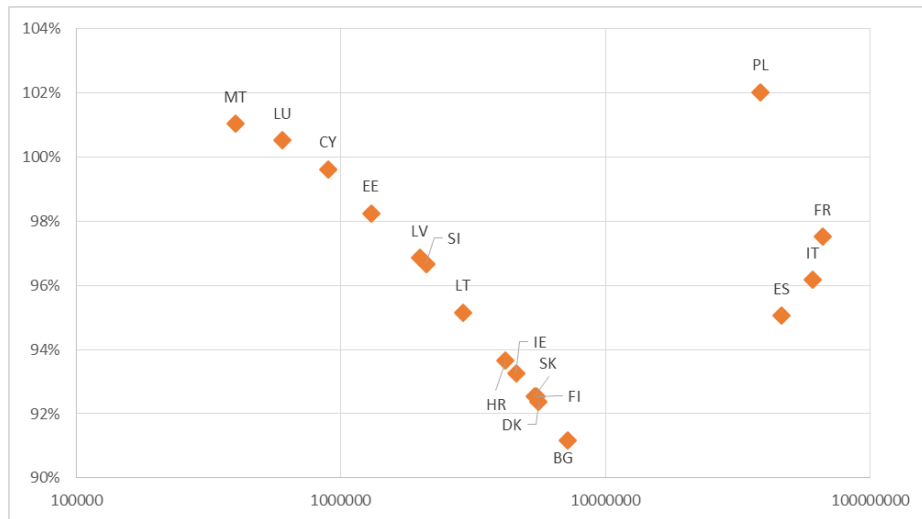


Fig. 2. Adjusted change in power due to Germany exit versus populations (logarithmic scale)



Fig. 3. Adjusted change in power due to Czexit after Germany exit versus populations (logarithmic scale)

countries would be the losers of the event, and the power of the large countries would increase. There seems to be a general pattern that an exit triggering a decrease in the quota benefits large, an exit not triggering such a change benefits small member states.

References

1. Bräuninger, T. and T. König, (2005) Indices of Power IOP 2.0.
2. European Parliament, 2015, EU budget explained: expenditure and contribution by member state.
3. Eurostat, 2014, EUROPOP2013 - Convergence scenario, national level, Population predictions - [tps00002].
4. Herne, K. and H. Nurmi, 1993, The Distribution of A Priori Voting Power in the EC Council of Ministers and the European Parliament. *Scandinavian Political Studies*, 16(3), 269-284.
5. Kóczy, L. Á., 2016, How Brexit affects European Union power distribution. Working Paper Series 1601.
6. Shapley, L. S. and M. Shubik, 1954, A method for evaluating the distribution of power in a committee system. *American Political Science Review*, 48, 787-792.
7. Shapley, L. S., 1953, A Value for n-Person Games in: H. W. Kuhn and A. Tucker, eds. *Contributions to the Theory of Games. Vol. II* (Princeton University Press), 307-317.
8. Standard Eurobarometer, 2016, 84 Autumn 2015 Report: Public opinion in the European Union. 73–75.

9. Widgrén, M. T., 1994, Voting power in the EC decision making and the consequences of two different enlargements. *European Economic Review*, 38(5), 1153-1170.
10. Felsenthal, D.S. and M. Machover, 2003, A Priori Voting Power: What Is It All About? *Political Studies Review*, 2:1-23.