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Article

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DEFRACTIONALISATION IN DIFFERENT ELECTORAL SYSTEMS

Electoral systems face two competing aims: firstly to ensure that the transmission of citizens' votes into parliamentary seats is proportional and secondly, that the legislative body has a stable majority to back up a government. As a result, there tend to be major differences between national electoral systems in terms of their respective history and depending on whether proportionality or the capacity to govern is considered as more important. While the aim of proportionality demands that the legislative body should be as fractionalised as the electorate body, the aim of building enough capacity to govern demands at least some degree of defractionalisation. In this article a measure used to quantify the degree of defractionalisation is discussed and applied to legislative bodies in different European countries.

Electoral system families

In general a distinction is drawn between two main families of electoral systems: proportional representation (PR) and the plurality or majority system (Lijphart 1991). Additionally there are electoral systems that contain components of both and are therefore called mixed or hybrid systems. Each electoral system has specific

Box 1

Visual Storytelling

The data used in this article is available as [visual story](#).

Visual Storytelling allows you to analyse DICE information using interactive maps and graphs.

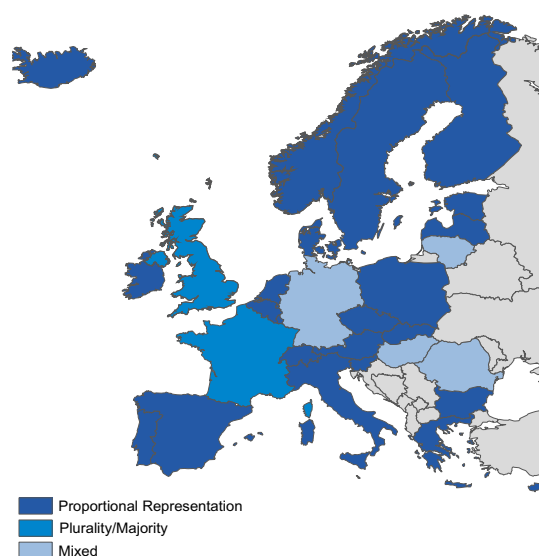
This feature enables users to:

- See how indicators alter over time (play function).
- Use scatter or radar plots to compare different indicators and connections.
- Select individual countries to compare performance.
- Select additional information layers in all visualisations.

advantages. Proportional representation claims to have greater proportionality overall, and especially better representation of minorities. Plurality/majority electoral systems, on the other hand, claim clearer accountability and higher capacities to govern (Lijphart 1991). Mixed systems try to combine the benefits of both systems. Most European countries today have proportional representation systems or mixed systems. In Europe only France and United Kingdom have a majority system (see Figure 1).

Figure 1

Electoral system families in Europe



Source: IDEA (2013); www.ifo.de/w/3gMZQP2V/K/visualstory.

Indices of fractionalisation

To assess the proportionality and the extent of defractionalisation in the different electoral systems empirically the two following indices of fractionalisation proposed by Rae (1968) are useful:

$$rae_{leg} = 1 - \sum_{i=1}^m s_i^2 \quad rae_{ele} = 1 - \sum_{i=1}^m v_i^2$$

The indices show the fractionalisation of the legislative body and of the electorate body. In the formula m is the number of parties voted for, or having seats in the legislative body, v_i is the proportion of votes for party i ; s_i the proportion of seats in the legislative body associated with the party i . When there is no fractionalisation in the respective body, the corresponding index is zero as there is just one party ($m=1$) and therefore s_1 and v_1 are one. When the body is totally fractionalised, meaning

that every vote or parliamentary seat goes to another party, the indices become nearly one.¹

To measure the difference between the fractionalisation of the electorate and the legislative body of an electoral system the spread between the two indices $Diff_{rae} = rae_{ele} - rae_{leg}$ is crucial. The spread shows the defractionalising effect of the electoral system as it compares

the fractionalisation of the electorate body with the fractionalisation of the legislative body. In most cases the difference is again between one and zero. Negative values are unlikely as it can be assumed that the fractionalisation of the electorate is higher than the fractionalisation of the legislative body and therefore rae_{ele} is higher than rae_{leg} .² This is the case because of the defractionalising effect of the electoral systems, which mostly

¹ For better presentation all values displayed in the following are multiplied by one hundred.

² Does not hold for Italy in the years 1994 and 1995 where the highly complex, mixed electoral system introduced in 1993 leads to a higher fractionalisation of parliament than of the electorate body.

Table 1

Fractionalisation indices and electoral system family			
	Diff _{rae} (Median)	Diff _{rae} 2011	Electoral system family
Denmark	1.05	0.36	Proportional Representation
Netherlands	1.27	0.51	Proportional Representation
Malta	1.37	1.89	Proportional Representation
Sweden	1.44	1.16	Proportional Representation
Iceland	1.44	1.91	Proportional Representation
Cyprus	1.51	1.83	Proportional Representation
Belgium	1.75	1.93	Proportional Representation
Austria	1.79	2.75	Proportional Representation
Switzerland	2.01	2.23	Proportional Representation
Finland	2.22	1.68	Proportional Representation
Germany	2.37	2.78	Mixed
Slovenia	2.61	3.17	Proportional Representation
Italy	2.86	6.17	Proportional Representation
Luxembourg	2.93	4.06	Proportional Representation
Norway	3.01	2.68	Proportional Representation
Estonia	3.65	5.11	Proportional Representation
Latvia	3.74	2.43	Proportional Representation
Ireland	4.71	7.30	Proportional Representation
Slovak Republic	5.12	6.93	Proportional Representation
Lithuania	6.10	6.10	Mixed
Poland	6.44	6.63	Proportional Representation
Romania	6.55	2.31	Mixed
Czech Republic	6.73	7.40	Proportional Representation
Portugal	6.93	6.93	Proportional Representation
Greece	8.04	6.87	Proportional Representation
Bulgaria	8.86	7.53	Proportional Representation
Spain	9.02	9.38	Proportional Representation
Hungary	10.00	15.53	Mixed
United Kingdom	12.59	11.89	Plurality/Majority
France	12.98	17.58	Plurality/Majority

Source: IDEA (2013), Armingeon et al. (2013); DICE Database (2013, 2014a, 2014b).

favour bigger parties over their smaller counterparts (Rae 1968). As perfect proportionality exists, when “every party receives exactly the same share of the seats as it won of the votes” (Galager 1991, 33), it can be assumed that values nearer to zero have a better proportionality in the transmission of votes into seats.

Effects of electoral systems

As stated in the beginning, the second function of the electoral system is to provide a legislative body with a stable majority to back up a government. To ensure this, most electoral systems have measures that influence the fractionalisation of the legislative body in a way that legislative bodies are less fractionalised than the electorate body. In most cases a party or a coalition has to reach a minimal value of the votes cast. This threshold can be explicit, as, for example, in Austria or Denmark on nationwide level, in Spain on a district level, or implicit through the limited number of seats of the legislative body as in the Netherlands (see Table 2). Additionally, there are other measures that influence the composition of the legislative body and ensure that there is a stable majority in the legislative body. Two examples of such cases are: 1) In Greece the party obtaining the most votes gets 50 additional seats. 2) If the strongest party or coalition in Italy fails to win 340 out of 617

seats, the party needs to obtain additional seats until it reaches 340 seats.³

The benefit of the approach used here is that it covers all of the measures cited that are used to influence the composition of the legislative body as it looks at the final result of all the measures and compares it with the original electorate body.

In most countries the electoral systems has experienced some changes over time, but the difference in the fractionalisation indices already alternated in every election. In view of this fact it is difficult to draw a clear distinction between the changes in fractionalisation caused by electoral system reforms and those driven by electoral behaviour. Hence a cross country comparison for a single year could be misleading. For a comparison between the electoral systems in different countries it is more useful to look at the median value of the fractionalisation across time for each country (Diff_{rae} (Median)). This value then offers insights into the systemic design of the electoral system with regard to the importance of proportionality.

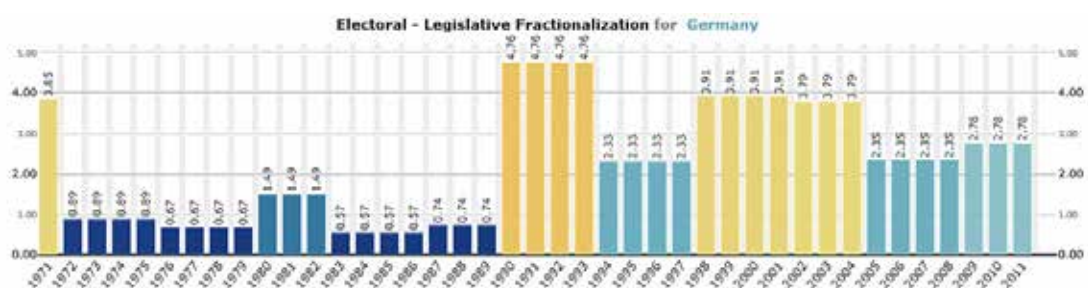
As expected from the theory, the plurality/majority systems in France and United Kingdom exhibit the highest

³ This measure was executed in the three elections between 2006 and 2013, but was declared as an infringement of the constitution at the end of 2013 (Corte costituzionale 2014).

Figure 2: Difference in fractionalisations in Italy



Figure 3: Difference in fractionalisations in Germany



difference between the fractionalisation of the electorate and the legislative body. Spain (9.02) has the highest value in the group of PR systems, which is a result of a regionalised party system and a three percent threshold at a district level combined with the fact that Spain has many small districts. This favours big national parties over their small regional counterparts, which may obtain a significant share of votes in some districts, but only a few seats in the legislative body (Field 2009). Denmark (1.05) and the Netherlands (1.27) rank best in this observation. Denmark has a relatively low threshold at a

national level with additional exceptions. The whole electoral system is designed to create as much proportionality as possible (see Table 2).

For Italy we can observe that the change in electoral system in 2005 initially led to a slightly better proportionality in the electoral system, but with the 2008 election this value increased significantly. The current electoral system (described in Table 2) seems to have a more defractionalising effect than the previous electoral system.

Table 2

Electoral systems characteristics	
Austria	Closed party-list system with proportional representation applying the Hare method to the regional and provincial constituencies, and the d'Hondt method at the federal level; 4 per cent threshold for parties to gain representation.
Denmark	Proportional representation system according to a modified version of the St. Laguë method and Hare quota and using the method of greatest remainders. Each elector can cast either a "personal vote" for one of the candidates or a vote for one of the party lists. They can vote for any of the candidates or parties of their constituency, not being limited to those of their nomination district. Of the 175 seats reserved for Denmark proper, 135 seats are distributed among the constituencies. The 40 remaining, or compensatory, seats are then distributed among the parties which either have won at least one constituency seat; have obtained, in two electoral regions, at least as many votes as the average number of valid votes cast in the region, per constituency seat; or have obtained at least 2% of all valid votes cast in the country as a whole. Such distribution, based on votes obtained on the national scale, is aimed at redressing the imbalance caused through the distribution of the constituency seats. When it has been decided which parties are entitled to a share of the compensatory seats, the number of seats which each party is proportionately entitled to of the 175 seats is calculated on the basis of the total number of votes cast for these parties in all parts of the country. From the number of seats thus arrived at for each party, the number of constituency seats already obtained by the party is deducted. The resulting figure is the number of compensatory seats due to the party. The end result of this system is a distribution of seats in the Folketing that faithfully reflects the share of the popular votes received by the parties.
Greece	<ul style="list-style-type: none"> - Parties must obtain at least 3 per cent of the votes cast to obtain parliamentary representation. - 250 seats are distributed in accordance with the Hagenbach-Bischoff system. - The party obtaining the highest number of valid votes is entitled to 50 seats, allocated to candidates on its party list. - majority vote, under some circumstances, to allocate further remaining seats at the national level and simple majority vote in eight single-member constituencies.
Italy	<ul style="list-style-type: none"> - Proportional representation system for 629 of 630 seats, using blocked party lists for 617 of the 630 members elected from Italy and for the 12 members elected by Italian citizens overseas (First-past-the-post system for the single-member constituency in Valle d'Aosta). <p>The minimum thresholds for a seat in the Chamber of Deputies are:</p> <ul style="list-style-type: none"> - for a political coalition: 10 % of total valid votes; - for a political party (list) within a coalition: 2% of total valid votes; - for a political party (list) which is not affiliated with any political coalition: 4% of total votes cast nationwide; - for language minority lists: 20% of the votes cast in their constituency. <p>However, any list obtaining the highest number of votes among all lists and which fails to win 2% of the votes cast is also entitled to a seat. If the political coalition or party with the highest number of votes fails to win 340 seats, it is given "bonus" seats to meet the 340-seat requirement. The 277 remaining seats are distributed among the other coalitions or unaffiliated lists using the whole number quotient and highest remainders method.</p>
Netherlands	Party-list system with proportional representation. Seats are distributed at the national level among different lists or groups of lists which have obtained at least 0.67% of the nationwide vote, each being awarded as many seats as the number of times the votes for its candidates is the multiple of an established national quota (the total of valid votes in the country divided by the number of seats (150) to be filled). Within each list, seats are then allocated among candidates according to the order in which they appear on the list. The seats remaining unfilled after this first distribution are then allotted according to the d'Hondt method of highest average.

Source: IPU (2013); DICE Database (2013).

On the other hand, the rise of new parties can lead to changes in the fractionalisation as can be shown for Germany. With German unification and the elections in 1990 the party system diversified and the defractionalising effect of the electoral system had a stronger impact as a result. In the last elections (2013) the diversification proceeded and the difference between the fractionalisation of the electorate body and the legislative body increased further.

Conclusion

It was shown that different electoral systems have different defractionalising effects. In majority or plurality systems these effects are stronger than in proportional representation systems. Depending on the measures used, however, the legislative body has a lot less fragmented structure than the electoral body, also in proportional representation systems. The huge variation in proportional representation systems depends on how the electoral system tries to achieve proportionality and the capacity to govern. The measures described in Italy and Greece, for example, are the result of experiences with unstable legislative majorities. However, the diversification of the party system can also lead to changes in the defractionalising effects of an electoral system. Through the effects of defractionalisation, established parties can prevent small new parties from getting into the legislative body. Hence countries that are highly concerned about proportionality should adjust their electoral system according to the new socio-political situations expressed in the diversification of the party system to minimise the defractionalising effects of the electoral system.

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