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The Best Represented Voters in Europe: An *a priori* Voting Power Analysis of the 2004 Elections for the European Parliament

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Abstract As parties in national parliaments the party groups in the European Parliament (EP) are the prime movers of the parliamentary decision making. In EP elections the voters vote for their favorite parties thus determining the composition of each party group's delegation in the EP. We use the Penrose-Banzhaf index analysis to find out which groups of the European electorate have been most influential in the *a priori* sense. More specifically, we determine the *a priori* influence of various voter groups on the outcomes of EP decision making.

Keywords Penrose-Banzhaf index, European Parliament, representation

1. Introduction

With the institutional changes from the Maastricht Treaty onwards the European Parliament (EP) has acquired a steadily increasing role in the political system of the European Union (EU). Although still far behind the legislative powers of most European national parliaments, the EP is becoming more and more equal with the Council of Ministers in producing EU level legislation.

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And as party groups are the main actors in the Parliament, these groups are now in a key position to influence the EU policy process.

In proportional representation systems it is common to ask whether the composition of the parliament - i.e. the distribution of seats to parties - is sufficiently representative of the electorate at large, that is, whether a party with the support of x% among the electorate gets somewhat close to x% of the seats in the parliament. If it does, then the goal of proportionality has been achieved and to the extent the two distributions deviate from one another, the outcome is deemed disproportional.

This commonplace reasoning overlooks a crucial fact about parliamentary decision making, viz. that parliaments not only debate legislation, but also make binding legislative decisions. These are typically made through voting, often by simple majority of the votes given, but sometimes higher support thresholds are imposed on passing legislative proposals. It is then obvious that a group with x% of the seats does not necessarily dictate x% of the legislation. Indeed, one could argue that in systems where only simple majority is required for passing legislative motions, any group with more than 50% of the seats controls 100% of the legislation. In any event, the distribution of seats would appear a poor proxy of legislative influence.

But how to measure the legislative influence of a party? *Ex post* one could compare the legislative positions of each party with the legislation that has been passed over the parliamentary term. That would perhaps be the most accurate way of determining the actual influence. However, it ignores one of the most important characteristics of power, *viz.* its dispositional nature. Power is commonly viewed as the ability or disposition to bring about outcomes despite various forms of opposition. The more varied types of opposing forces an agent can overcome in bringing about the outcomes, the more power he/she (hereafter he) has. Now, if one studies the outcomes and their consonance with the views of a party in an effort to determine the latter's power, one ignores the dispositional aspect of power. A set of outcomes may to a considerable degree match the objectives of a party, but this may be the result of sheer luck rather than influence (see Barry's (1982) now classic power index criticism). So, even in retrospect one may confuse coincidence with influence.

Nonetheless, what the parties are striving at is legislation that satisfies their programmatic goals. Should they achieve this, then at least they have been successful (if not necessarily powerful) in having their views represented. One way to measure the representative success is to tally the legislative motions where a party has supported the winning position. This is the approach of the classic power indices. Rather than power they can, thus, more accurately be viewed as methods of measuring the degree of representation of views. However, the setting in which the power indices are applicable is not

a posteriori, i.e. after the legislative motions have been dealt with, but before the fact or *a priori*. They aim at determining the degree of representation of a party or individual, given its resources (seats) and the decision rule.

The aim of this article is to determine the *a priori* influence over legislative outcomes of various voter groups in Europe. The next section discusses the basic properties of the voting power indices. The balance of power between the EP party groups after the 2004 elections is introduced in the third section. The empirical analysis is found in the two subsequent sections. While we aim at saying something significant about the voters' influence over the outcomes of parliamentary decision making, we emphasize the *a priori* nature of our work. The actual influence of various voting groups is likely to be mediated by many considerations pertaining to differential frequency of various policy issues, ideological distances of parties, political and personal skills or parliamentarians, *etc.* In this paper these will be abstracted away.

2. A priori voting power

Determining whether the passed legislative motions have coincided with a party's goals is not necessarily a simple yes-no issue. Indeed, compromise proposals are routinely being drafted in legislatures for the very purpose of satisfying several participants' goals to a reasonable degree. For example, a member of a parliament may strive for lowering the minimum age required for voting to 16 from 21. Yet, he may be reasonably satisfied with a compromise proposal of 18 years if he knows that his favorite proposal has no chance of receiving the majority support. Obviously, the legislative success, rather than being a dichotomous variable, may take on degrees. The measurement of legislative influence would, thus, ideally take account of how much difference a party has made in terms of the legislative outcomes, *i.e.* what would have been the outcome without the party's participation *vs.* the actual outcome.

Before the fact this kind of counterfactual analysis is well-nigh impossible. Indeed, *a priori* one cannot even determine how many times a party supports the legislative proposals that are accepted, let alone venture a guess of how reluctantly it does so. What we can do is to measure the probability of a party being on the winning side, given that we know the probability of others supporting or not supporting legislative proposals. We can also determine, for any given coalition, whether a party's presence in it is necessary for it to be winning. In other words, we can count whether a party has a swing in a coalition. This, in fact, is the way the classic *a priori* voting power indices are constructed. To wit, one of them, the Shapley-Shubik index, assumes that every participant is equally likely to support legislative proposals, while the other, the Banzhaf-index, assumes that each participant supports the legis-

lation with probability 1/2.[1] Following Straffin (1977; 1988) we say that the Shapley-Shubik index is based on homogeneity and Banzhaf index on independence assumption. Both indices measure the expected relative frequency (probability) of a participant's being 'critically', i.e. non-redundantly, on the winning side under the assumption just mentioned. In other words, the Shapley-Shubik index value of a participant is the probability of his supporting a winning proposal assuming that each participant has the same probability of voting 'yes'. The Banzhaf index, in turn, is the probability that the participant supports the winning proposal assuming that every participant has the probability of 1/2 of supporting a proposal.

Let us illustrate these considerations by an example from the early days of EU, then called the European Economic Community (EEC). The Council of Ministers consisted of 6 members: France, Germany, Italy, Belgium, The Netherlands and Luxembourg. These countries had 4, 4, 4, 2, 2 and 1 votes respectively, while the quota for passing was set at 12.[2] In the standard notation, the Council setting is formulated as follows:

$$u = [12; 4, 4, 4, 2, 2, 1]$$

A country has power in the game-theoretic sense only if it is a non-redundant member of a coalition S of countries so that S can pass motions, *i.e.* has the total voting weight of at least 12. Denote each country's probability of voting for a proposal by p_i where $i = 1, \ldots, 6$ identifies the country (France = 1, ... , Luxembourg = 6). Let us focus, for example, on the power of country 1, France. Consider now the probability of those divisions of countries into 'yes' and 'no' coalitions in which France's vote is crucial for the passage of a motion. One of these configurations is such that France is accompanied by Italy and Germany on the 'yes' side, while the others vote 'no'. Its probability is: $p_1 p_2 p_3 \times (1 - p_4)(1 - p_5)(1 - p_6)$.

Other configurations where France is essentially present and their occurrence probabilities are:[3]

$$(1, 2, 4, 5) : p_1 p_2 p_4 p_5 \times (1 - p_3)(1 - p_6)$$
$$(1, 2, 4, 5, 6) : p_1 p_2 p_4 p_5 p_6 \times (1 - p_3)$$
$$(1, 3, 4, 5) : p_1 p_3 p_4 p_5 \times (1 - p_2)(1 - p_6)$$
$$(1, 3, 4, 5, 6) : p_1 p_3 p_4 p_5 p_6 \times (1 - p_2)$$
$$(1, 2, 3, 4) : p_1 p_2 p_3 p_4 \times (1 - p_5)(1 - p_6)$$

[1] The literature on power indices is vast. See *e.g.* Shapley and Shubik (1954), Banzhaf (1965), Dubey and Shapley (1979), Holler (1982), Owen (2001), Roth (1988). A very readable account rich with historical and theoretical material is Felsenthal and Machover (1998).

[2] During the early years the emphasis was on the consensus decisions and the qualified majority voting was in fact not practiced, but the rules were in place nonetheless.

[3] Only 'yes' voters are mentioned. Those not voting 'yes' are assumed to vote 'no'.

$(1,2,3,5) : p_1p_2p_3p_5 \times (1-p_4)(1-p_6)$
$(1,2,3,5,6) : p_1p_2p_3p_5p_6 \times (1-p_4)$
$(1,2,3,4,6) : p_1p_2p_3p_4p_6 \times (1-p_5)$
$(1,2,3,6) : p_1p_2p_3p_6 \times (1-p_4)(1-p_6)$

The probability that France determines the voting outcome is the sum of these 10 four probabilities. Let us denote this sum by $F_F(p_1,\ldots,p_6)$. The marginal contribution of France can be recovered by forming the partial derivative of this sum with respect to p_1. We denote this by $f_F(p_1,\ldots,p_6)$.

Suppose now that each country has an identical probability - call it r - of voting 'yes'. In other words, assume that

$$p_1 = p_2 = p_3 = p_4 = p_5 = p_6 = r$$

Then the above marginal probability of France's deciding the voting outcome is:

$$f_F(r,\ldots,r) = 4r^4(1-r) + 5r^3(1-r)^2 + r^2(1-r)^3$$

which can be written as:

$$f_F(r,\ldots,r) = -3r^4 + 2r^3 + r^2.$$

Since we do not know the particular probability value of this homogenous body, we integrate over the range from 0 to 1:

$$\int_0^1 f_F(r,\ldots,r)dr = \int_0^1 (-3r^4 + 2r^3 + r^2)dr = \frac{7}{30}.$$

This, then, is the probability that France is crucial, provided that the council is homogeneous. Similarly, we can compute the probability that Belgium votes with the majority in the homogenous council. We get:

$$\int_0^1 f_B(r) = \int_0^1 (-3r^4 + 3r^3)dr = \frac{3}{20}$$

To compute the Banzhaf index value of France, we evaluate $f_F(p_1,\ldots,p_6)$ by giving each country the probability 1/2 of voting 'yes'. Thus, we get:

$$f_F(\frac{1}{2},\ldots,\frac{1}{2}) = 4(1/2)^5 + 5(1/2)^5 + (1/2)^5 = \frac{10}{32}$$

Obviously, Italy and Germany get identical values since their resources (votes) are the same as France's. For Belgium we get:

$$f_B(\frac{1}{2},\ldots,\frac{1}{2}) = 3(1/2)^5 + 3(1/2)^5 = \frac{6}{32}.$$

Obviously, this holds for The Netherlands as well. An inspection at the vote distribution shows that Luxembourg's power index value must be zero since it can make no losing coalition winning by joining it (Brams and Affuso 1986). It is in game-theoretical terms a dummy player.

Originally the indices were defined in somewhat different - although mathematically equivalent - manner. The Shapley-Shubik index amounts to tallying the relative number of those permutations of participants in which a participant is pivotal. Formally:

$$\phi_i = \sum_{S \subseteq N} \sum_{i \in S} \frac{(s-1)!(n-s)!}{n!} [v(S) - v(S \setminus i]$$

Here N denotes the set of n participants, S a coalition with s members and v the characteristic function which gets the value 1 if its argument S is winning and the value 0 otherwise.[4]

Banzhaf index, on the other hand, is based on non-redundant presences or swings of participants in coalitions. A coalition S which is winning when a participant i is among its members, but not winning when he is not, is called a swing for participant i. The Banzhaf index simply tallies the swings of each participant. This number is then divided either by 2^{n-1} or by the total number of swings of all participants. In the former case we have the absolute Banzhaf index and in the latter case the normalized Banzhaf index. Formally:

$$\beta_i = \frac{\sum_{S \subseteq N} v(S) - v(S \setminus i)}{2^{n-1}}$$

is the definition of the absolute Banzhaf index, and

$$\beta'_i = \frac{\sum_{S \subseteq N} v(S) - v(S \setminus i)}{\sum_{j \in N} \sum_{S \subseteq N} v(S) - v(S \setminus j)}$$

the definition of the normalized one.

Applying these formulae to the above EU6 example shows that the values computed above do indeed coincide with the ones obtained by applying the standard formulae. Owen and Straffin have shown that this is the case in general. In other words, these power indices can be given purely probabilistic interpretations.[5] Thus, the debate regarding whether permutations are more or less plausible starting point to *a priori* voting power measurement is largely irrelevant (see also Laruelle and Widgrén 1996). In fact, the

[4] The Shapley-Shubik index is a trivial restriction of the Shapley value to what is called simple games, i.e. those games where only winning coalitions have value and each of these has the same value 1. The Shapley value is defined for more general types of coalition games (Shapley 1953).

[5] In fact, the Shapley-Shubik index can also be viewed as a rational payoff expectation in multilateral bargaining equilibrium (see Harsanyi 1977).

issue is not so much that of exerting influence but of getting one's views represented in the decision outcomes. Seen in this light we then look upon the Banzhaf index as an estimate of the degree of representation of one's views in a body which consists of participants that independently of each other vote for or against motions. The Shapley-Shubik index, in turn, is a similar estimate but based on the assumption that each participant votes with identical (although unknown) probability for or against motions. When looked upon from the probabilistic perspective the *a priori* nature of the indices becomes immediately evident: we know that the views of participants are in general correlated, but far from homogeneous.

The aim of this paper is not to contribute to the discussion of the superiority of either one of the above power indices over the other. On this issue we remain agnostic. For purely practical reasons our focus will be on the (absolute) Banzhaf index since it enables us to come up with measures of *a priori* influence over outcomes in compound voting games.

3. Representation of and in party groups

Compared with parties in national legislatures, the EP's party groups operate in a very different institutional environment. There is no EU government accountable to the Parliament. There are no coherent and hierarchically organized European-level parties, with MEPs elected from lists drawn by national parties and on the basis of national electoral campaigns. The social and cultural heterogeneity of the EU is reflected in the internal diversity of the groups, with a total of approximately 170 parties from 25 member states winning seats in the Parliament in the 2004 elections. However, the EP's party groups have gradually over the decades consolidated their position in the Parliament, primarily through introducing procedural reforms that enable them to make effective use of EP's legislative powers. At the same time the shape of the party system has become more stable, at least as far as the main groups are concerned. (Kreppel 2002)

The EP's Rules of Procedure, the standing orders of the Parliament, set numerical criteria for group formation. After the 2004 elections 'A political group shall comprise Members elected in at least one-fifth of the Member States. The minimum number of Members required to form a political group shall be nineteen' (Rule 29). The Parliament as an institution has structured its internal organization so as to maximize its influence in the EU political system. The thrust of legislative work is done in the parliamentary committees where individual rapporteurs draft reports that form the basis for parliamentary resolutions. In a similar fashion, the party groups have designed their own internal rules and division of labor so as to make the most of Parliament's hard-won powers. The relatively non-centralized group structure,

with emphasis on building consensus among national party delegations, is essential in fostering group cohesion. And, research has clearly shown that despite their heterogeneity, the EP groups achieve unitary behavior, at least when measured by voting in the plenary sessions (Hix et al. 2006).

The 2004 elections consolidated the position of the main groups in the Parliament (Table 1). The seat distribution between the two main groups remained by and large unchanged, and the balance of power between the left and right is approximately the same as in the 1999-2004 Parliament, with the right-of-centre groups controlling around 50% and the left-of-centre groups around 40% of the seats. The European People's Party-European Democrats (EPP-ED) continues as the largest group, with 268 MEPs (37%) in the new Parliament. The second largest group is the group of the Party of the European Socialists (PES) with 200 seats (27%). The new liberal group has 88 MEPs (12%) from 19 member states, the largest seat share held by the liberals in the Parliament since the first elections held in 1979. The group also changed its name from the previous ELDR to the Alliance of Liberals and Democrats for Europe (ALDE). The Greens/European Free Alliance group has 42 MEPs (6%) in the new Parliament. As was expected, the enlargement did not profit the Greens as no Green MEPs were elected to the Parliament from the ten new member states. The European United Left-Nordic Green Left (EUL-NGL) has 41 MEPs (6%). This group has traditionally been a quite loose alliance, and this pattern looks set to continue in the 2004 – 2009 Parliament. As a result of the electoral victories gained by Eurosceptical lists in several countries, the Independence and Democracy group (IND/DEM) - a group whose raison d'etre is opposition to further integration - has 37 MEPs (5%). The Union for a Europe of Nations (UEN), with 27 MEPs (4%), is the smallest group in the Parliament.

4. Representation of national party delegations in the EP

Table 2 exhibits the power index value distribution over the party groups in the EP after the 2004 elections.[6] In computing the entries we have assumed that EP makes its decisions by absolute majority voting, i.e. using the decision rule according to which each coalition with at least 367 votes is a winning one. This decision rule is used for example in the second reading of the co-decision procedure, and is thus important in terms of both the EP's legislative powers and coalition politics in the chamber.

As is often the case, the power index values do not differ much from each other or from the seat shares of parties. Theoretical examples in the literature show that this is not necessarily the case (see Brams 1975, 193; Dubey and

[6] The power index values reported in this paper have been computed using the programs written by Tommi Meskanen. They are available at the Powerslave web site of University of Turku (http://powerslave.utu.fi/index.html) maintained by Antti Pajala.

Table 1 — Party Groups in the EP of 2004

Country	Party								
	EPP-ED	PSE	ALDE	Greens-EFA	EUL-NGL	IND-DEM	UEN	NA	
Austria	6	7		2				3	18
Belgium	6	7	6	2				3	24
Germany	49	23	7	13	7				99
Denmark	1	5	4	1	1	1	1		14
Spain	24	24	2	3	1				54
France	17	31	11	6	3	3		7	78
Finland	4	3	5	1	1				14
Greece	11	8			4	1			24
Italy	24	16	12	2	7	4	9	4	78
Ireland	5	1	1		1	1	4		13
Luxembourg	3	1	1	1					6
Netherlands	7	7	5	4	2	2			27
Portugal	9	12			3				24
Sweden	5	5	3	1	2	3			19
U.K.	28	19	12	5	1	11		2	78
Czech	14	2			6	1		1	24
Estonia	1	3	2						6
Cyprus	3		1		2				6
Latvia	3		1	1			4		9
Lithuania	2	2	7				2		13
Hungary	13	9	2						24
Malta	2	3							5
Poland	19	8	4			10	7	6	54
Slovenia	4	1	2						7
Slovakia	8	3						3	14
Total	268	200	88	42	41	37	27	29	732

Shapley 1979, 104; Straffin 1988, 73-74). Indeed, given a seat distribution the variation of the decision rule is often accompanied with a wide variation in the decisiveness and hence the *a priori* voting power of coalitions of various size.

Let us now see how much influence the various national delegations can be expected to exert on the outcomes of intra-party group decision making. Table 3 indicates the *a priori* voting power values of the member state delegations in the party groups. In other words, Table 3 gives the absolute Banzhaf index value of the national delegations in each EP party group. This is, of course, a highly theoretical value since it is unlikely that national delegations would be voting as a unanimous block in EP party group ballots. We emphasize again the *a priori* nature of our analysis.

The entries on Table 3 are computed assuming that the party groups make

Table 2 — Power Index Values of Party Groups for Absolute Majority Rule

Group	ϕ_i	β'_i	β_i
EPP	0.40	0.695	0.39
PSE	0.20	0.305	0.17
ALDE	0.15	0.273	0.15
Greens	0.07	0.133	0.07
EUL	0.06	0.117	0.07
IND	0.06	0.117	0.07
UEN	0.04	0.070	0.04
NA	0.04	0.070	0.04
Total	1.02	1.780	1.00

decisions resorting to the simple majority rule, *i.e.* a majority of members is required in order for a motion to pass. Obviously, larger delegations get larger Banzhaf index values, *i.e.* larger delegations have larger number of swings than smaller ones. Thus, their views tend to be *a priori* better represented in the stands taken by the respective party groups than those of smaller delegations. The question we now turn to is the relative expected voting power of the national delegations in the EP decisions. Obviously, this power is mediated by the EP party groups, but the *a priori* index we have resorted to – the absolute Banzhaf index – enables us to get a numerical estimate of this influence.

Once we know the *a priori* voting power of a national delegation in a given EP party group and the *a priori* voting power of the party group in the EP, we are able to compute the theoretical probability that the national delegation is on the winning side in the EP simply by multiplication. This, however, is possible only in the case of absolute Banzhaf index. Owen (2001, 283) has proved the following theorem. Let $w_1, \ldots, w_m$ be a sequence of games of $N_1, \ldots, N_m$ players, respectively, so that all player sets are disjoint. For example, w_1 could the EPP-PE game with national delegations of the group as players, w_2 the PSE game with the national delegations PSE delegations as players, etc. Let now

$$u = v[w_1, \ldots, w_m]$$

be a compound game. In our EP example w_1 can be defined as

$$w_1(S) = 1, \text{if} \mid S \mid \geq 135$$

$$w_1(S) = 0, \text{otherwise.}$$

Table 3 — Absolute Banzhaf Index Values of National Delegations in Party Groups

Country	Party							
	EPP	PSE	ALDE	Greens	EUL	IND	UEN	NA
Austria	0.06	0.09		0.07				0.20
Belgium	0.06	0.09	0.18	0.07				0.20
Germany	0.58	0.32	0.21	0.78	0.43			
Denmark	0.01	0.07	0.12	0.37	0.06	0.06	0.13	
Spain	0.24	0.34	0.06	0.11	0.06			
France	0.17	0.46	0.35	0.20	0.17	0.18		0.52
Finland	0.04	0.04	0.15	0.04	0.06			
Greece	0.11	0.11			0.22	0.06		
Italy	0.24	0.22	0.39	0.07	0.43	0.27	0.63	0.27
Ireland	0.05	0.01	0.03		0.06	0.06	0.25	
Luxembourg	0.03	0.01	0.03	0.04				
Netherlands	0.07	0.09	0.15	0.15	0.11	0.11		
Portugal	0.09	0.16			0.17			
Sweden	0.05	0.07	0.09	0.04	0.11	0.18		
U.K.	0.28	0.26	0.39	0.18	0.06	0.56		0.17
Czech	0.14	0.03			0.36	0.06		0.05
Estonia	0.01	0.04	0.06					
Cyprus	0.03		0.03		0.11			
Latvia	0.03		0.03	0.04			0.25	
Lithuania	0.02	0.03	0.21				0.13	
Hungary	0.13	0.12	0.06					
Malta	0.02	0.04						
Poland	0.19	0.11	0.12			0.44	0.38	0.42
Slovenia	0.04	0.01	0.06					
Slovakia	0.08	0.04						0.20

In words, a coalition within EPP-PE is winning if and only if it consists of more than half of the members of the group. The within-group games of other groups are defined in analogous way. The compound game u, in turn, is defined

$$u(S) = 1, \text{if } |S| \geq 367$$

$$u(S) = 0, \text{otherwise.}$$

Owen's theorem states that if a player i - say, a national party delegation - belongs to a party group N_j, then its power in the compound game u is the product of its power in the component within-group game and the power of

the group in the EP game.

$$\beta_i[u] = \beta_j[v]\beta_i[w_j].$$

5. Representation of individual voters in EP

The influence of an individual voter in the decision outcomes of the national delegation of the party he votes for can computed as the number of his swings in the voting game consisting of all voters who vote for the party in question. In other words, computing a voter's *a priori* voting power in the Banzhaf sense we should consider all coalitions which are non-winning without the voter's presence, but winning with his presence. This amount to considering the number of coalitions of the order of 2^{n-1} where n is the number of voters casting their vote for the party. Using normal distribution approximation Owen derives a very useful formula

$$\beta_i[w_j] = \sqrt{\frac{2}{\pi m_j}}.$$

Here m_j is the number of voters voting for party j in the EP election in a given country. This expression can be viewed as a measure of an individual voter's *a priori* voting power in the EP party grouping which his candidate is affiliated with. So, for instance, we can use this formula to estimate a German CDU voter's influence on the decisions within EPP-PE. Table 4 reports these Banzhaf values of those voter groups who were successful in getting their candidates elected to EP.

The considerable variation in the index values of various voter groups in Table 4 is due to the rather uneven distribution of support of various EP party groups among the member states. If one is interested in gaining insight into how much representation various national voter groups have in the EP groups, the figures in Table 4 give an answer. It should be emphasized that the entries themselves tell very little of direct importance. Rather their ratios should be focused upon. Thus, for example, the German CDU voters seem to be about twice as important in forming the EPP's stand than those Portuguese voters whose candidates became MEPs in the EPP group. The supporters of the Danish Socialist People's Party, the MEP of which sits in the Greens/EFA group, are *a priori* more than ten times as powerful in the Greens-EFA group than the green party supporters from Italy.

Getting one's views represented in the EP party groups is, of course, a major achievement in its own right. However, party groups do not enact EU legislation nor do they issue directives. The ultimate locus of parliamentary power is naturally the EP itself. Hence, in order to determine the variation of individual voter influence one should look at EP level decision making.

Table 4 — The Banzhaf Index Values Multiplied by 10^5 of Various Voter Groups in Party Groups in the EP of 2004

Country	Party Groups							
	EPP-ED	PSE	ALDE	Greens-EFA	EUL-NGL	IND-DEM	UEN	NA
Austria	5.16	8.22		10.61				22.88
Belgium	3.76	5.91	1.70	7.94				16.80
Germany	13.72	10.92	13.67	35.69	27.04			
Denmark	1.66	6.76	13.80	76.90	14.07	11.28	27.79	
Spain	7.51	10.48	5.39	14.05	5.52			
France	7.83	16.65	19.58	14.36	13.31	12.82		31.69
Finland	4.92	5.38	17.41	7.18	11.32			
Greece	5.24	5.91			19.46	9.33		
Italy	6.11	5.48	26.66	6.64	20.48	16.92	25.72	18.77
Ireland	5.48	2.45	4.60		9.91		27.60	
Luxembourg	3.64	2.17	5.96	7.39				
Netherlands	5.00	7.03	13.25	14.30	15.38	15.91		
Portugal	6.53	10.44			19.38			
Sweden	4.97	6.77	11.26	7.72	15.64	24.59		
U.K.	10.44	10.81	19.86	12.31	11.58	27.38		32.72
Czech	9.99	4.69			41.27	10.70		
Estonia	4.93	10.90	18.21					
Cyprus	7.52		10.02		29.03			
Latvia	5.95		12.38	12.05			48.26	
Lithuania	3.95	5.09	24.19				24.06	
Hungary	7.91	9.36	9.81					
Malta	4.93	9.24						
Poland	10.90	9.03	14.42			35.77	34.06	41.54
Slovenia	7.27	4.27	15.49					
Slovakia	10.80	9.25						46.86

In *a priori* terms one may utilize the composition property of the absolute Banzhaf index and multiply the entries of Table 4 with those of Table 2 (absolute Banzhaf index column). Since we have already assessed the influence of national voter groups on EP parties, this multiplication provides us with an overall measure of the voter group's influence on the EP level. This is about as close as one can get by way of measuring the degree in which the opinions of various voter groups are represented in EP decisions (see Table 5).

Table 5 reveals considerable variation across the columns indicating that the weights of individual voters voting for candidates of a given EP party group differ a great deal. Similarly, and more to the point of the present article, one observes wide variation in the overall influence of voters of a given country. The oft-stated piece of advice to the voters to vote for candidates of large EP groups in order to maximize their influence in the EP,

Table 5 — The A Priori Voting Power, Multiplied by 10^5 of Voter Groups in the EP of 2004

Country	Party Groups							
	EPP-ED	PSE	ALDE	Greens-EFA	EUL-NGL	IND-DEM	UEN	NA
Austria	3.59	2.50		1.41				1.61
Belgium	2.61	1.80	3.20	1.05				1.18
Germany	9.54	3.33	3.74	4.74	3.17			
Denmark	1.15	2.06	3.77	10.21	1.65	1.32	1.95	
Spain	5.22	3.19	1.47	1.87	0.65			
France	5.44	5.07	5.35	1.91	1.56	1.50		2.23
Finland	3.42	1.64	4.76	0.95	1.33			
Greece	3.64	1.80			2.28	1.09		
Italy	4.25	1.67	7.29	0.88	2.40	1.98	1.81	1.32
Ireland	3.81	0.75	1.26		1.16		1.94	
Luxembourg	2.53	0.66	1.63	0.98				
Netherlands	3.48	2.14	3.62	1.90	1.80	1.86		
Portugal	4.54	3.18			2.27			
Sweden	3.46	2.06	3.08	1.02	1.83	2.88		
U.K.	7.26	3.29	5.43	1.63	1.36	3.21		2.30
Czech	6.95	1.43			4.84	1.25		
Estonia	3.43	3.32	4.98					
Cyprus	5.23		2.74		3.40			
Latvia	4.14		3.39	1.60			3.39	
Lithuania	2.75	1.55	6.61				1.69	
Hungary	5.50	2.85	2.68					
Malta	3.43	2.81						
Poland	7.58	2.75	3.94			4.19	2.39	2.92
Slovenia	5.05	1.30	4.24					
Slovakia	7.51	2.82						3.29

seems questionable in the light of the *a priori* voting powers of voters. Although the supporters of those parties whose MEPs join either the EPP-ED or PSE do in general reasonably well in terms of voting weights, there are several cases which call this big party advice into question. To wit, in Belgium, Denmark, Finland, Italy, The Netherlands, Estonia and Lithuania the largest voting weights are assigned to voters voting for neither EPP-ED nor PSE candidates. In Denmark, two groups of voters do better in voting weight terms than the supporters of large parties. In fact, only in Austria, Spain, Portugal and Malta, the two groups with largest individual voter voting weights are EPP-ED and PSE.[7] So, the advice to vote for the largest parties affiliated with the largest EP groups in order to avoid wasting one's vote has a somewhat

[7] The case of Slovakia could also be mentioned, but in this case the group with second largest voting weight is the non-aligned one which differs from the party groups proper.

hollow ring to it.

Table 5 reveals that the best represented voters in the 2004 EP elections are the Danish supporters of the Socialist People's Party followed by German and Polish voters whose MEPs affiliate themselves with EPP-ED. The big party advice gains marginal support by the fact that several voter groups with relatively large voting power are in the EPP-ED column. The voters whose views are worst represented are, of course, those whose party did not get any representation at all in the EP. These can be identified by blank entries in Table 5.

6. Concluding remarks

One of the recurring questions in EP elections is whether it makes sense for the supporters of smaller parties to vote for their favorites or to cast their vote to the big party that represents 'lesser evil' from the voters' point of view. One way of providing an answer to this question is to look at the *a priori* influence that the supporters of various parties can theoretically be expected to exert on the outcomes of the EP decision making. Utilizing Owen's insights we have conducted such an analysis of the 2004 EP elections. On the basis of this analysis it seems that in purely *a priori* terms, the small party voters are not necessarily worse off than those who vote for parties affiliated with either of the two largest EP party groups. We emphasize the theoretical nature of our results. We have made a number simplifying assumptions: the independence of voters of each other, the independence of games of their sub-games, the independence of party groups from one another etc. Our results merely show the 'mechanical' effect of the majority rule applied in various levels of representation on the decisiveness of voters, delegations and party groups. Thus, our main conclusion is that the mechanical influence of a voter voting for a small party is not necessarily smaller than that of his fellow voters voting for the big parties.

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