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THE CONSTITUTIONAL POWER OF THE VOTING OWNERS IN THE EUROPEAN PARLIAMENT

1. INTRODUCTION

After the Maastricht Treaty (1992) and the Amsterdam Treaty (1997) the European Parliament (EP) has increased its power. EP shares co-decision power with the Council of Ministers (ECM) in several fields of legislation and has a consultation power in most other legislation matters. Furthermore, it approves the appointments of the head of the European Commission (EC) and of its members chosen by the ECM and may vote their dismissal in (extreme) cases of miss-behaviour. It may issue motions on any matter related to the EU institutions.

Unlike the ECM (made up of national delegations), the EP assembly is officially organised in political groups (parties) composed by the Members of the European Parliament (MEP) of different countries affiliated to them. The EU Treaty explicitly recognises, on the one side, a role to national governments in the ECM for the pursuance of national interests; on the other side, a political role is recognised to the parties in the EP as important factor of integration "to form an European conscience and to express the political will of the citizens of the Union".

The EP is elected every five years by direct universal suffrage of the EU citizens with a pure proportional electoral system, given the **seats' allotment per Member State** laid down by the Treaties. The EP decisions are taken under simple majority voting rule.

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There is a claim that the **national seats' allotment** mainly favours the electors of big countries voting for big parties. The opposite claim also occurs asserting that the distribution of votes among countries is "unfair", particularly after the enlargements, because it is biased in favour of small countries. This paper is devoted to assess which of these claims is true as for the 5th term (with 15 countries) and 6th terms (with 25 and 27 countries) and whether the EU enlargements have substantially modified the results. To this respect, following the results of Owen (1975 and 1982),¹ Nurmi (1997) studied the voting powers of the political-national sub-groups in the EP for the 4th term, in order to check whether, particularly in small countries, voters should restrict their choice to the largest political groups rather than to small parties or not to vote at all, to enhance the pursuance of their preferences in the assembly.² In this perspective, Nurmi (1997) considered, as benchmark the electors' voting power in a ideal system of direct democracy (e.g. the square root rule) and assumed that, when voting in the assembly, the MEP elected in every country follow a party discipline always voting as a bloc, with the party policy assumed to be decided by the members of the various parties under simple majority voting rule (SMV).

Here, the theoretical framework takes under consideration the fact that the MEP are organised in **political groups**. However, the issues under vote, several times, cross the parties involving "**national interests**" (as the national sharing of regional and social funds, the agricultural policy and the decisions on the internal market rules). The EU is a quasi-federation of national states and it is in the very nature of a federation that the national interests of the various states are institutionally safeguarded. In the EP different national points of views often confront with each other in the democratic choice, not always in favour of the formation of a true single market.

Among others, two well known facts support our view. The parliamentary failure, for a long time, of the take-over European directive seems to be a typical case in point up to the 5th term. The EP, in July 2001, with a 50% vote (273 to 273) rejected the text prepared by the conciliatory committee, thus, firing the directive. In this decision that practically destroyed 12 years of tough negotiations, the contrary vote of the German MEP from different parties was decisive. The EP's approval in December 2003 of the

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package on the EU takeover directive was obtained, by 321 votes in favour to 219 against, subject to the introduction of strategic amendments to the Commission's draft, which made key provisions of the legislation optional. More recently, the Directive on services in the internal market (the Bolkestein Directive) - an initiative of the European Commission - was harshly criticised by the left wing parties and by mass protests in various Western EU countries, including France, Germany, Belgium, Sweden, Denmark. The expression "Polish plumber" was forged by France fearing that Polish plumbers could work in France under Polish labour law, which implies social dumping. On 22/3/2005, EU leaders, led by France, agreed on a revision of the Directive. The EP considered the Directive again in October 2005, adding a few changes to the original text. On February 14-16, 2006, a plenary session of the EP carried out its first reading. There was, first, a GUE (communists) and Verts proposal of full rejection of the directive, 486 votes cons and 153 votes pro. On February 16, 2006, MEP voted in favour (with 391 vs 213 votes) of a proposed revision to the Directive, clearly 'watered down'. The majority of members of the two largest groups in the EP (PPE-DE and PSE) declared to vote in favour of the revised bill. The GUE and the Verts declared to vote against the new proposal. *Basically*, there was a negative drawing up of Western Europe countries (France, Netherlands, Germany, Belgium, Sweden and Denmark) towards the reform, opposed to Eastern Europe plus UK.

These voting behaviours clearly show that the MEP in important cases are actually playing the Nations' game, likely interpreting the will of their electors. In both the above considered cases, the MEP voted crossing the institutional schemes of political parties laid down for the EP³ to pursue what they believed was the interest of their electors. Rationally, voters of the various countries participate to the EP elections to pursue, via their representatives, both political/ideological interests and their interests as citizens of a given nation. And although EP rules require that the MEP must be organised in parties, the EP parties' leaders do not call for party loyalty in some relevant occasions where national interests seem to override political parties and MEP explicitly vote according to national interests, without a rupture with their party. In other words, rather than playing the political game, when voting on the relevant

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amendments, the MEP often combine in national blocs and play a “multi-partisan” game, in which they merge with their country’s mates of different ideology to adopt a common (national) line and for the electorate, the question arises of the choice of the political group that properly represents it also when playing the cross-party national strategy of pursuance of national interests.

To capture this complexity of EP decision making, we analyse the assembly as composed of homogeneous sub groups – “**cells**” – consisting of MEP that belong to both a given nationality and a given political group as represented in tables 1, 2 and 3, respectively for the 5th (with 15 countries) and 6th (with 25 and 27 countries) terms of the EP.

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Table 1. EP 5th Term (1999-2004)

	PPE-DE	PSE	ELDR	Verts/ALE	GUE/NLG	UEN	EDD	NI	Total seats	Share seats	Share of pop.
B	6	5	5	7				2	25	0.0399	0.027
DK	1	3	6		1	1	4		16	0.0256	0.014
D	53	35		4	7				99	0.1581	0.219
G	9	9			7				25	0.0399	0.028
ES	28	24	3	4	4			1	64	0.1022	0.105
F	21	22		9	11	3	9	12	87	0.1390	0.157
IRL	5	1	1	2		6			15	0.0240	0.010
I	34	16	8	2	6	10		11	87	0.1390	0.154
L	2	2	1	1					6	0.0096	0.001
NL	9	6	8	4	1		3		31	0.0495	0.042
A	7	7		2				5	21	0.0335	0.022
P	9	12			2	2			25	0.0399	0.027
FNL	5	3	5	2	1				16	0.0256	0.014
SV	7	6	4	2	3				22	0.0351	0.024
GB	36	30	11	6			2	2	87	0.1390	0.158
Total	232	181	52	45	43	22	18	33	626	1	1

where: **PPE- DE** = Group of the European People's Party and European Democrats; **PSE** = Group of the Party of European Socialists; **ELDR** = Group of the European Liberal, Democratic and Reformist Party; **VERTS/ALE** = Group of the Greens/European Free Alliance; **GUE/NGL** = Confederal Group of the European United Left/Nordic Green Left; **UEN** = Group of the Union for a Europe of Nations; **EDD** = Europe of Democracies and Diversities Group; **NI** = Non attached Members - Mixed Group; **UPE** = Union for Europe; **ARE** = European radical alliance; **IEDN** = Independents/ Europe of nations.

Table 2. EP 6th Term with 25 EU Member States (distribution of seats and population of 2004)

	PPE-DE	PES	ALDE	Verts-ALE	GUE-NLG	IND-DEM	UEN	NI	Total seats	Share seats	share of pop.	
Austria	6	7		2				3	18	0.0246	0.0176	
Belgium	6	7	6	2				3	24	0.0328	0.0225	
Cyprus	3		1		2				6	0.0082	0.0016	
Czech Rep.	14	2			6	1		1	24	0.0328	0.0221	
Denmark	1	5	4	1	1	1	1		14	0.0191	0.0117	
Estonia	1	3	2						6	0.0082	0.0029	
Finland	4	3	5	1	1				14	0.0191	0.0113	
France	17	31	11	6	3	3		7	78	0.1066	0.1423	
Germany	49	23	7	13	7				99	0.1352	0.1785	
Greece	11	8			4	1			24	0.0328	0.0239	
Hungary	13	9	2						24	0.0328	0.0219	
Ireland	5	1	1		1	1	4		13	0.0178	0.0087	
Italy	24	16	12	2	7	4	9	4	78	0.1066	0.1250	
Latvia	3		1	1			4		9	0.0123	0.0050	
Lithuania	2	2	7				2		13	0.0178	0.0075	
Luxembourg	3	1	1	1					6	0.0082	0.0010	
Malta	2	3							5	0.0068	0.0009	
Netherlands	7	7	5	4	2	2			27	0.0369	0.0352	
Poland	19	8	4				10	7	6	54	0.0738	0.0826
Portugal	9	12			3				24	0.0328	0.0227	
Slovakia	8	3						3	14	0.0191	0.0116	
Slovenia	4	1	2						7	0.0096	0.0043	
Spain	24	24	2	3	1				54	0.0738	0.0913	
Sweden	5	5	3	1	2	3			19	0.0260	0.0194	
United Kingdom GB	28	19	12	5	1		11	2	78	0.1066	0.1287	
TOTAL	268	200	88	42	41	37	27	29	732	1	1	

PPE-DE Group of the European People's Party (Christian Democrats) and European Democrats **PSE** Socialist Group in the European Parliament **ALDE** Group of the Alliance of Liberals and Democrats for Europe **Verts/ALE** Group of the Greens/European Free Alliance **GUE/NGL** Confederal Group of the European United Left - Nordic Green Left **IND/DEM** Independence/Democracy Group **UEN** Union for Europe of the Nations Group **NI** Non-attached Members

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Table 3. EP 6th Term with 27 EU Member States ((distribution of seats July 2007 and population of 2005)

	PPE-DE	PSE	ELDR ALDE	UEN	Verts-ALE	GUE- NLG	IND-DEM	ITS	NI	Total seats	Share seats	share of pop.
Belgium BE	6	7	6		2			3		24	0.03	0.02
Bulgaria BG	5	5	5					3		18	0.02	0.02
Czech Rep. CZ	14	2				6	1		1	24	0.03	0.02
Denmark DK	1	5	4	1	1	1	1			14	0.02	0.01
Germany DE	49	23	7		13	7				99	0.13	0.17
Estonia EE	1	3	2							6	0.01	0.00
Ireland IE	5	1	1	4		1	1			13	0.02	0.01
Greece GR	11	8				4	1			24	0.03	0.02
Spain ES	24	24	2		3	1				54	0.07	0.09
France FR	17	31	11		6	3	3	7		78	0.10	0.13
Italy IT	24	14	13	13	2	7		2	3	78	0.10	0.12
Cyprus CY	3		1			2				6	0.01	0.00
Latvia LV	3		1	4	1					9	0.01	0.00
Lithuania LT	2	2	7	2						13	0.02	0.01
Luxemburg LU	3	1	1		1					6	0.01	0.00
Hungary HU	13	9	2							24	0.03	0.02
Malta MT	2	3								5	0.01	0.00
Netherlandsnl	7	7	5		4	2	2			27	0.03	0.03
Austria AT	6	7	1		2			1	1	18	0.02	0.02
Poland PL	15	9	5	20			3		2	54	0.07	0.08
Portugal PT	9	12				3				24	0.03	0.02
Romania RO	9	12	8					6		35	0.04	0.04
Slovenia SI	4	1	2							7	0.01	0.00
Slovakia SK	8	3							3	14	0.02	0.01
Finland FI	4	3	5		1	1				14	0.02	0.01
Sweden SE	6	5	3		1	2	2			19	0.02	0.02
United Kingdom GB	27	19	12		5	1	10	1	3	78	0.10	0.12
Total	278	216	104	44	42	41	24	23	13	785	1	1

PPE-DE = Group of the European People's Party (Christian Democrats) and European Democrats, PSE = Socialist Group in the European Parliament, ELDR = Group of the Alliance of Liberals and Democrats for Europe, Verts/ALE = Group of the Greens/European Free Alliance, GUE/NGL = Confederal Group of the European United Left - Nordic Green Left, IND/DEM = Independence/Democracy Group, UEN = Union for Europe of the Nations Group, ITS = Identity tradition sovereignty group; NI = Non-attached Members

We assume that when political or national interests are at stake, the cells might try to orient the decision of the assembly by forming voting blocs with other cells (presumed to be either politically or nationally more homogeneous), under the assumption that other cells are forming similar blocs. In section 2, we assess the (Penrose, ψ , and Banzhaf, β)⁴ voting powers indexes of the cells in two basic **composite** games: the **political game** in which each national cell belonging to a given party tries to address the policy of its political group in the assembly, and the **national game** in which cells of different parties combine into a national group, trying to influence its policy to some specific national interest. As a benchmark we also consider the **anarchic or uncoordinated game** in which each cell plays separately. In these contexts, fairness is referred to the principle “**one person one vote**” (OPOV), by which the voting

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power of the representatives (of each cell) should be proportional to the population represented.⁵ The fairness thus defined is measured by an index of voting rights of the electors as given by the ratio of the share of voting power of each cell in the EP to the share of population of EU that it represents. Section 3 analyses the results for EU 15, EU 25 and EU27 in terms of representation of the electorate. It results that neither the electors of the big countries nor those of the big parties are favoured in both the 5th and the 6th terms as compared with electors of the small countries and of the small parties.

2. THE THEORETICAL FRAMEWORK

2.1. THE WEIGHTING VOTING SYSTEM IN THE EUROPEAN PARLIAMENT AND THE BASIC STRATEGIC OPTIONS OF THE CELLS

The simplest notion of weighting voting game with a quota q refers to a collection of winning coalitions W of voters $i=1\dots n$ of an assembly N , where a non negative voting-endowment, w_i , is assigned to each voter i such that $0 < q \leq \sum_{i \in N} w_i$.⁶ When approving a motion in EP, however, the notion of weighting voting game becomes more articulate. As mentioned, the representatives, once elected, enter into political groups, according to their choices presumably known before the election. We can represent this distribution of EP representatives as in table 4. That is, in the Parliament, the elected representatives of a given country C ($C=1, \dots, Z$) of weight R_C , laid down by the treaty, after the election choose to enrol to a given political group P ($P=1, \dots, K$), i.e, the representatives of a country split into cells. We shall refer to the voting endowment of a cell i of country C and party P as w_{iPC} , given by the number of MEP elected for party P in country C . The endowment of party P in the assembly, across countries, is $R_{\bullet P} = \sum_C w_{iPC}$, whereas $R_C = \sum_P w_{iPC}$ is the voting endowment of country C . We shall assume fully homogeneous members only internal to each cell, which imply that each cell acts as an individual player.

Table 4. The distribution of the elected representatives by cells in the parliament of a federation

	Party 1	...	Party P	...	Party K	Total
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Country 1	w_{i1}		w_{iP1}		w_{iK1}	$R_{1\bullet} = \sum_P w_{iP1}$
....						
Country C	w_{iC}		w_{iPC}		w_{iKC}	$R_{C\bullet} = \sum_P w_{iPC}$
...						
Country Z	w_{iZ}		w_{iPZ}		w_{iKZ}	$R_{Z\bullet} = \sum_P w_{iPZ}$
Total	$R_{\bullet 1} = \sum_C w_{iC}$		$R_{\bullet P} = \sum_C w_{iPC}$		$R_{\bullet K} = \sum_C w_{iKC}$	

Given the above representation of the EP, three basic strategic games among cells seem to us interesting.

(I) The **anarchic game** where, under SMV, the cells play individually, forming random coalitions with any of the other cells.

In this case, the Penrose power of a cell, i_{CP} , playing independently in the assembly is simply

$$\psi^{Anar}_{i_{CP}}(W_{K \times Z}) = \frac{S_{i_{CP}}(W_{K \times Z})}{2^{K \times Z - 1}}$$

where $K \times Z$ = number of cells playing independently of each other, $W_{K \times Z}$ = set of winning coalitions in this game and $S_{i_{CP}}$ is "swing-function" that assigns to any voting game and any voter i_{CP} a value $S_{i_{CP}}(W_{K \times Z})$ equal to the number of coalition in which i_{CP} is critical. The corresponding equation for the Banzhaf index, $\beta^{Anar}_{i_{CP}}$, is given by the ratio of the swings of a given player over the total swings of all players, $\beta^{Anar}_{i_{CP}}$ can also be obtained by normalizing the Penrose power of a given player over the sum of the Penrose values of all voters in the assembly considered.

(II) The **political game**, e.g., EP game with bloc formation under the same political affiliation, is made up of two games both under SMV:

Table 5

	Party 1	...	Party P	...	Party K	Total
Country 1	w_{i1}		w_{iP1}		w_{iK1}	$R_{1\bullet} = \sum_P w_{iP1}$
....						

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Country C	$w_{i_{1C}}$	$w_{i_{1P}}$	$w_{i_{1K}}$	$R_{C\bullet} = \sum_P w_{i_{1P}}$
...				
Country Z	$w_{i_{1Z}}$	$w_{i_{1P}}$	$w_{i_{1K}}$	$R_{Z\bullet} = \sum_P w_{i_{1P}}$
Total	$R_{\bullet 1} = \sum_C w_{i_{1C}}$	$R_{\bullet P} = \sum_C w_{i_{1P}}$	$R_{\bullet K} = \sum_C w_{i_{1K}}$	

1) *Internal decision of a political group*: the policy of the political group is decided on the basis of a voting game among its cells of the various countries (i.e., the game is among the cells in each column of table 5).

2) *Decision of the EP as resulting from the vote of different political groups*: once each political group P has decided its policy, it (all its members) votes accordingly as a bloc of weight $R_{\bullet P}$, with $P=1, \dots, K$ (i.e., the game is among the parties in the last row of table 5).

In the political game, the composite Penrose power of a cell via the political groups, $\psi_{i_{CP}}^{viaP}$, is the product of the Penrose power of the cell in the game internal to the party, $\psi_{i_{CP}}^P(W_Z^P)$, times the Penrose power of the party in the whole EP, $\psi_P(W_K)$, with the corresponding Banzhaf index obtained assuming that national cells share their party's power in the assembly with weights given by their Banzhaf power in the internal game.

(III) The national game is also made up of two games, both under SMV:

1) *Internal decision of the national bloc*: the policy of each national bloc is assumed to be decided by the vote of its cells having different political affiliation (i.e., the game is among the cells in each row of table 6).

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Table 6

	Party 1	...	Party P	...	Party K	Total
Country 1	$w_{i_{11}}$		$w_{i_{P1}}$		$w_{i_{K1}}$	$R_{1\bullet} = \sum_P w_{i_{P1}}$
Country C	$w_{i_{1C}}$		$w_{i_{PC}}$		$w_{i_{KC}}$	
Country Z	$w_{i_{1Z}}$		$w_{i_{PZ}}$		$w_{i_{KZ}}$	$R_{Z\bullet} = \sum_P w_{i_{PZ}}$
Total	$R_{\bullet 1} = \sum_C w_{i_{1C}}$		$R_{\bullet P} = \sum_C w_{i_{PC}}$		$R_{\bullet K} = \sum_C w_{i_{KC}}$	

2) *Final decision of the parliament as resulting from the vote of different national blocs*: once each national group of MEP has decided its policy, it (all its members) votes in the EP as a bloc of weight $R_{C\bullet}$, with $C=1,\dots,Z$ (i.e., the game is among countries in the last column of table 6).

The composite power that a cell of a given political affiliation entering a national bloc, $\psi_{i_{CP}}^{viaC}$, is the product of the Penrose power of the cell in the game internal to the national bloc $\psi_{i_{CP}}^C (w_K^C)$ times the Penrose power of the national bloc in the whole EP as resulting by the treaty, $\psi_C (W_Z)$. The corresponding Banzhaf index of the cell i_{CP} , $\beta_{i_{CP}}^{viaC}$, is given by the country's power in the assembly, β_C , times the cell's Banzhaf power in the country's internal game, $\beta_{i_{CP}}^C$.

2.2. EQUALITY OF ELECTORAL RIGHTS OF THE CITIZENS

Taking as a benchmark, the one man one vote principle (OPOV), as expression of the *equality of voting rights of the citizens* postulate, for each game we take the ratio between the Banzhaf power of a cell $\beta_{i_{CP}}$ and the share of population it represents, that is

$$F_{i_{CP}} = \beta_{i_{CP}} / \text{Share of } pop_{i_{CP}}$$

The index $F_{i_{CP}}$, thus obtained, considers whether and how much the voting power of the cell i_{CP} elected in country C for party P is distanced by the population it is expected to represent as required by the

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OPOV principle. If $F_{i_{CP}}$ is greater (equal or less) than 1, the considered citizens voting for a given party are endowed of a voting power greater (equal or less) than the measure of fairness implied by the OMOV postulate.

An aggregate measure of the same index for each country, in each game, is given by the following index

$$F_C = \sum_P \beta_{i_{CP}} / \text{Share of population of country } C$$

In other words, we consider for each strategic game the sum of the Banzhaf index of the cells of a given country and the share of population of that country in the EU.

3. RESULTS IN TERMS OF REPRESENTATION OF COUNTRIES AND CELLS

After having laid down the above theoretical structure, we focus, first, on the **ability of any given country** and, second, on the **ability of any given cell** of representing its own electorate (given the rule for seats' assignment) with its voting powers in the EP for the three strategic games in the 5th and 6th terms under SMV. That is, we assess, by the indexes F_C and $F_{i_{CP}}$, the fairness of distribution of voting powers of the electors of the EP of small and big countries and of small and big parties, focusing on the voting powers of the EP national-political cells.

3.1. RESULTS IN TERMS OF COUNTRIES' REPRESENTATION

The present distribution of seats among the EU countries, both in the Union of 15, 25 and of 27 countries, does not follow a proportionality principle, but a degressive criterion in terms of population. Yet the distribution of seats in the two terms and after the last enlargement does differ. Table 7 reports - for the three games in EU 15, EU 25 and EU 27 - the F_C and the share of seat to share of population.

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Table 7. Countries' representation (with member states ordered on the ratio of seats to population)

F_C in EU 15					F_C in EU 25					F_C EU 27				
EU 15	Anarch. game	Nation. game	Politic. game	seats / pop	EU25	Anarch. game	Nation. game	Politic. game	seats / pop	EU27	Anarch. game	Nation. game	Politic. game	seats / pop
Germany	0.756	0.759	0.688	0.723	France	0.750	0.761	0.738	0.749	Germany	0.778	0.791	0.823	0.750
GB	0.884	0.912	0.829	0.880	Germany	0.787	0.806	0.857	0.758	France	0.782	0.793	0.711	0.780
France	0.874	0.917	1.022	0.885	Spain	0.809	0.798	0.690	0.808	Spain	0.787	0.776	0.670	0.785
Italy	0.902	0.938	1.014	0.905	GB	0.827	0.841	0.816	0.828	GB	0.812	0.826	0.933	0.812
Spain	0.972	1.013	0.842	0.975	Italy	0.849	0.865	0.896	0.852	Italy	0.831	0.856	0.814	0.834
Netherlands	1.160	1.053	1.210	1.179	Poland	0.886	0.878	0.896	0.893	Poland	0.880	0.862	1.048	0.885
Greece	1.397	1.315	1.247	1.423	Netherlands	1.038	1.027	0.995	1.049	Romania	1.001	0.975	0.950	1.011
Belgium	1.437	1.363	1.580	1.467	Sweden	1.308	1.298	1.339	1.337	Netherlands	1.025	0.993	0.948	1.035
Sweden	1.462	1.373	1.475	1.490	Greece	1.357	1.340	1.256	1.373	Sweden	1.304	1.362	1.182	1.319
Portugal	1.474	1.395	1.316	1.502	Austria	1.385	1.362	1.310	1.401	Greece	1.342	1.240	1.143	1.354
Austria	1.528	1.421	1.565	1.558	Portugal	1.434	1.412	1.148	1.447	Austria	1.357	1.376	1.250	1.372
Denmark	1.780	1.681	1.801	1.806	Belgium	1.441	1.419	1.512	1.458	Portugal	1.413	1.399	1.156	1.425
Finland	1.818	1.724	1.942	1.859	Czech Rep.	1.467	1.444	1.539	1.484	Belgium	1.422	1.363	1.391	1.437
Ireland	2.355	2.185	2.215	2.402	Hungary	1.485	1.458	1.325	1.498	Bulgaria	1.435	1.328	1.436	1.450
Luxemburg	8.221	7.522	6.822	8.383	Denmark	1.593	1.576	1.713	1.638	Czech Rep.	1.457	1.441	1.446	1.468
					Slovakia	1.616	1.590	1.719	1.643	Hungary	1.474	1.458	1.293	1.486
					Finland	1.656	1.639	1.683	1.694	Denmark	1.600	1.724	1.515	1.618
					Ireland	1.987	1.964	2.183	2.040	Slovakia	1.609	1.550	2.060	1.626
					Slovenia	2.177	2.154	2.316	2.215	Finland	1.654	1.687	1.687	1.672
					Lithuania	2.361	2.308	2.817	2.383	Ireland	1.957	2.031	2.091	1.978
					Latvia	2.392	2.372	2.591	2.451	Slovenia	2.167	2.211	2.187	2.191
					Estonia	2.738	2.738	2.738	2.806	Lithuania	2.349	2.293	2.881	2.374
					Cyprus	5.062	5.062	5.694	5.186	Latvia	2.414	2.555	2.874	2.441
					Malta	7.746	7.630	6.937	7.897	Estonia	2.753	2.185	2.586	2.783
					Luxemburg	8.088	8.190	8.190	8.391	Cyprus	4.955	3.932	5.047	5.009
										Malta	7.674	7.309	6.091	7.759
										Luxemburg	8.156	8.631	7.876	8.246

Although the F_C index is a quite coarse one, the results are quite interesting because they give the picture in terms of the representation of the aggregate power of the cells that shall also be found for individual cells (see below). Notice, first, in table 7 the worse off countries in terms of seat to population. In the 5th term the five biggest (D, GB, F, I and ES) were those underrepresented in terms of seats (the share of seats to population was lower than 1). After the enlargements PL adds to the underrepresented countries in terms of seats. In terms of representation of power in the EU 25 the F_C over/below the unity follow by and large the same distribution, whereas Poland gains power in the political game in the EU 27. Netherlands and Romania, having a ratio of seats to population above the unity, have a F_C below unity in both the nation and political games. Also notice that for most countries the F_C for the anarchic game

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is higher than the F_C in both the political and the national games, which is a quite interesting result in terms of rational behaviour of players in bloc formation (see below).

3.2. RESULTS IN TERMS OF CELLS' REPRESENTATION

Following the OPOV principle that assigns to every citizen equal voting rights, a $F_{i_{CP}}$ of about 1 means fair distribution voting-rights in terms of voting power. On this basis, we shall try to answer the following questions. Is the strategy of concentrating the votes into the big parties by the voters of the big countries good enough to offset the distributional handicap in the voting power at the country level? Do the biggest parties better represent their electorate than the smallest parties? Does it make any difference for a citizen to belong to a small rather than to a big country when casting the vote for a big rather than a small party? Does the cells' strategic choice of playing the political rather than the national game affect the result in terms of representation?

Here, for representation's sake, for each term and each enlargement, we look at the index $[F_{i_{CP}} - 1]$ of the political, national and anarchic games and comment the result in terms of under (over) representation, which implies $[F_{i_{CP}} - 1] < (>) 0$ (in appendix we report the index $F_{i_{CP}}$ for all the cells in either context).⁷ The following figures report for each national cell belonging to a given party the ability of representing in terms of power its electorate. Beginning with **the political game**, it emerges that the two biggest groups (PPE-DE and PSE) and also the third biggest ELDR (present in most countries) represent the EU citizens, by and large, following (sometime exacerbating, depending on the votes obtained and the rule of transformation of votes into seats) the constitutional rule of representation (e.g., the share of seats to share of population). Figures 1 to 3 represent their performance in the three games: these parties over-represent the electors of the smallest countries and under represent those of the biggest.

Notice, however, that in the political game, the cut-off size for over/under representation follow a peculiar "law". The PPE_DE over represents the citizen for a higher group of countries (the 9 smallest

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countries in EU 15: e.g., all the countries smaller than the Netherlands; up to 18 in EU 25; 19 in EU 27), whereas the over representation of PSE, the second biggest political group is reduced to 2 countries in EU 15 (Ireland and Luxemburg), to 8 countries in EU 25 (Finland, Ireland, Slovenia, Latvia, Estonia, Lituania, Malta and Luxemburg) and to 9 countries in EU 27 (Denmark, Finland, Slovakia, Ireland, Slovenia, Estonia, Lituania, Malta and Luxemburg). This is quite obvious because PSE holds less seats than PPE-DE. What is less obvious is the power of representation of those **political groups smaller** than PSE. Beginning with ELDR, it overrepresents 10 countries in EU 15, 19 countries in EU 25 and 21 countries in EU 27. Similar results hold also for UEN, Verts, GUE...., which, in the political game, unexpectedly better represent their affiliated citizen (even in the biggest countries) than the second and sometime the first biggest parties. The extent of over representation might be lower (e.g., in general, smaller F) but the number of countries over represented in the political game is always higher.

In terms of the question posed by Nurmi, the behaviour of the cells implies that the small countries are almost always well over represented, whatever they vote either the biggest or the smallest parties (with the exception of PSE). Moreover, the power of the various political groups of various countries, in either term and in either composite game, in several cases, for the cells of the not-so-big parties is greater than that of the cells of the (two) biggest parties. This suggests that these cells do better represent the population voting for them. The crucial choice is, therefore, for the electorate of the biggest countries, where it would have been ex post expedient to have voted for the smallest parties, with the clear paradox, in terms of strategic electoral choice, that if all citizens switch from a big to a medium/small party, thus increasing the seats of the latter and making it big, they loose representation.

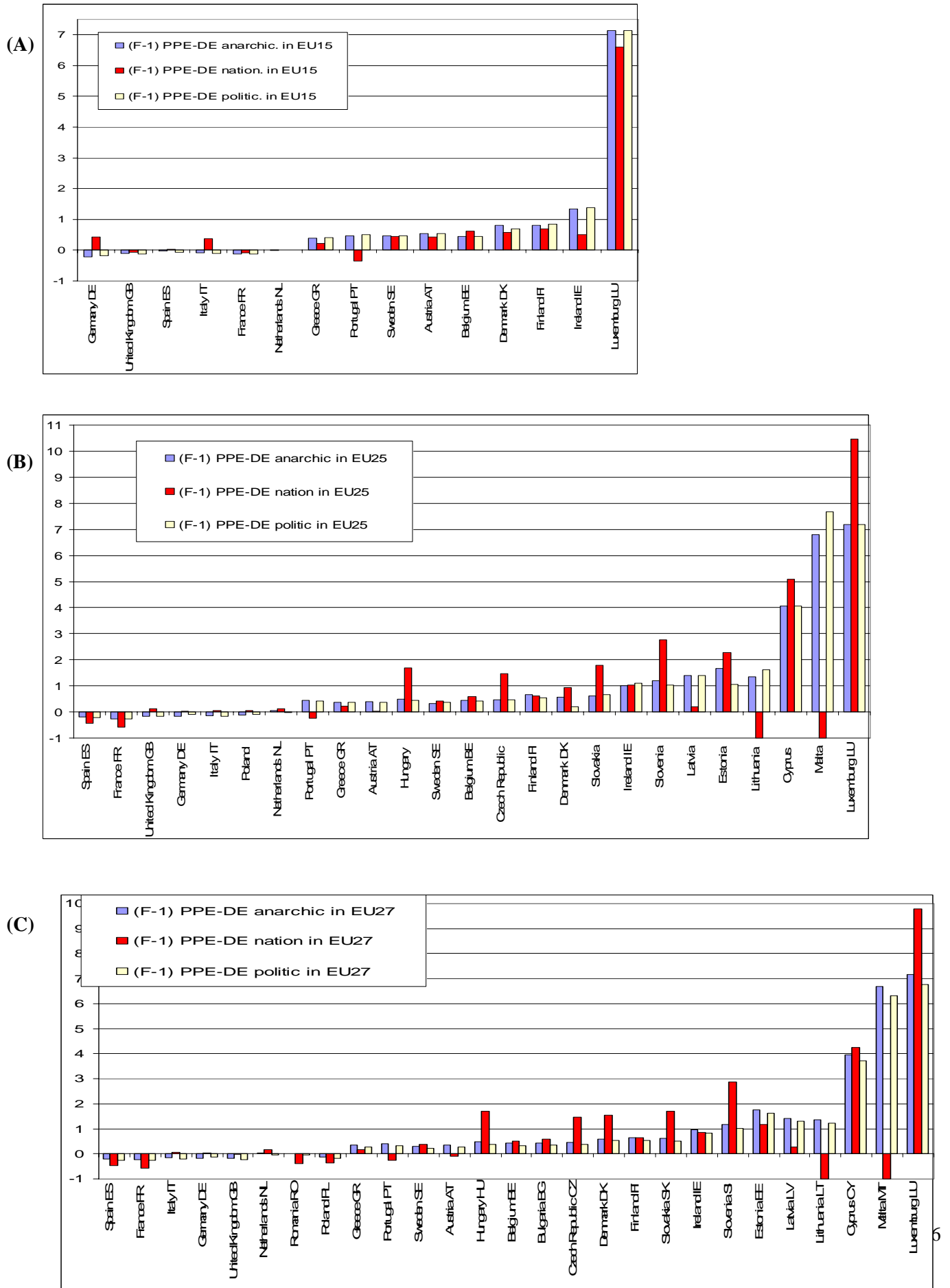
The nation game shows similar features, but with a higher number of exceptions determined by the games internal to the countries. In particular, if there is a vetoer among the cells of a given country in the internal game, it takes all the country power in the assembly. Thus, for example, some cells of the PPE-DE of small countries (like Malta and Lithuania) underrepresent their electors in both EU 25 and EU

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27. Nevertheless, as before, the second biggest party again results always less representative of both the first and the smallest political groups.

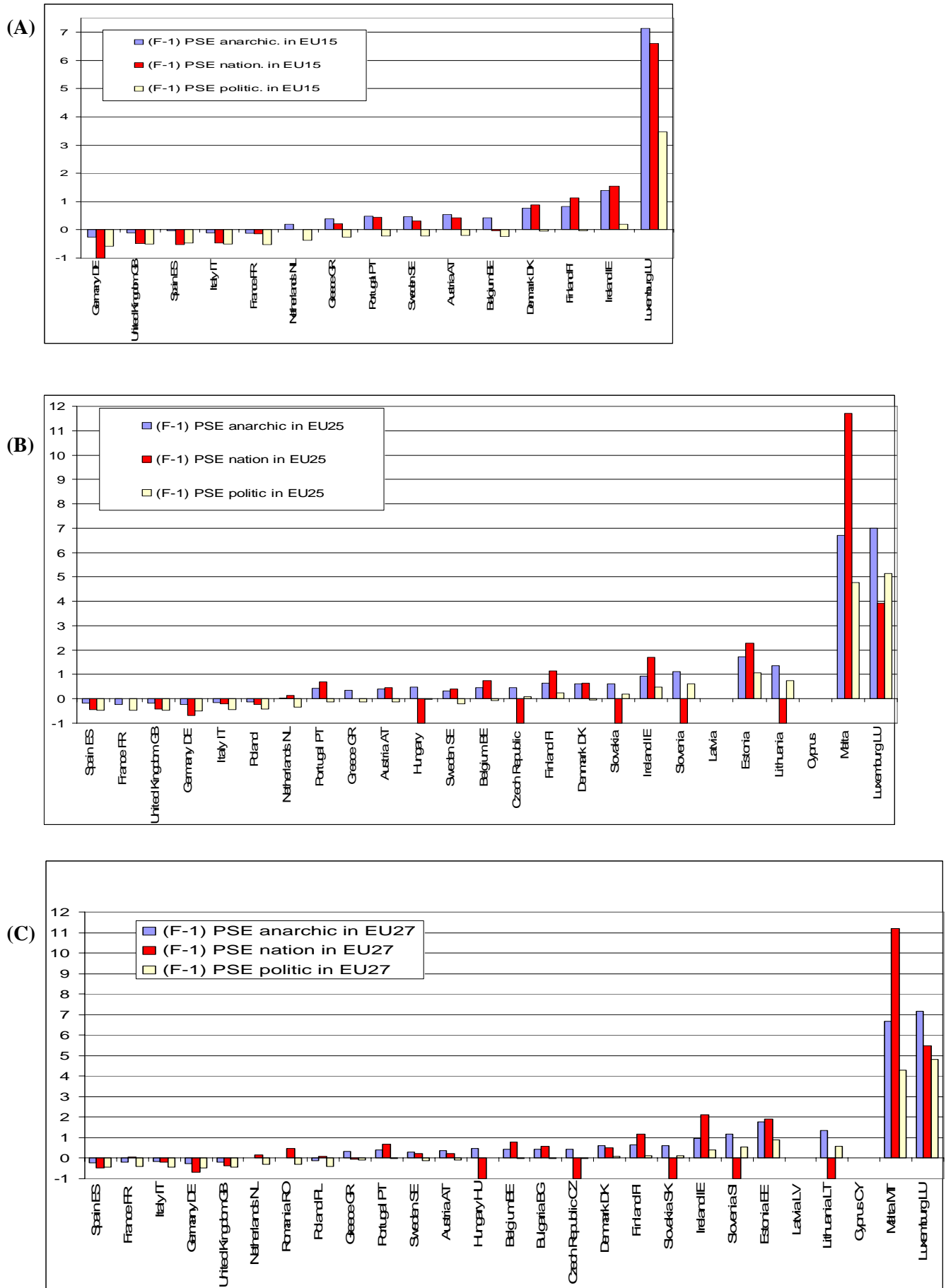
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Figure 1. The performance of the PPE-DE in terms of representation in the three games(anarchic, nation, politic) in EU 15 (A), EU25 (B) and EU27 (C)



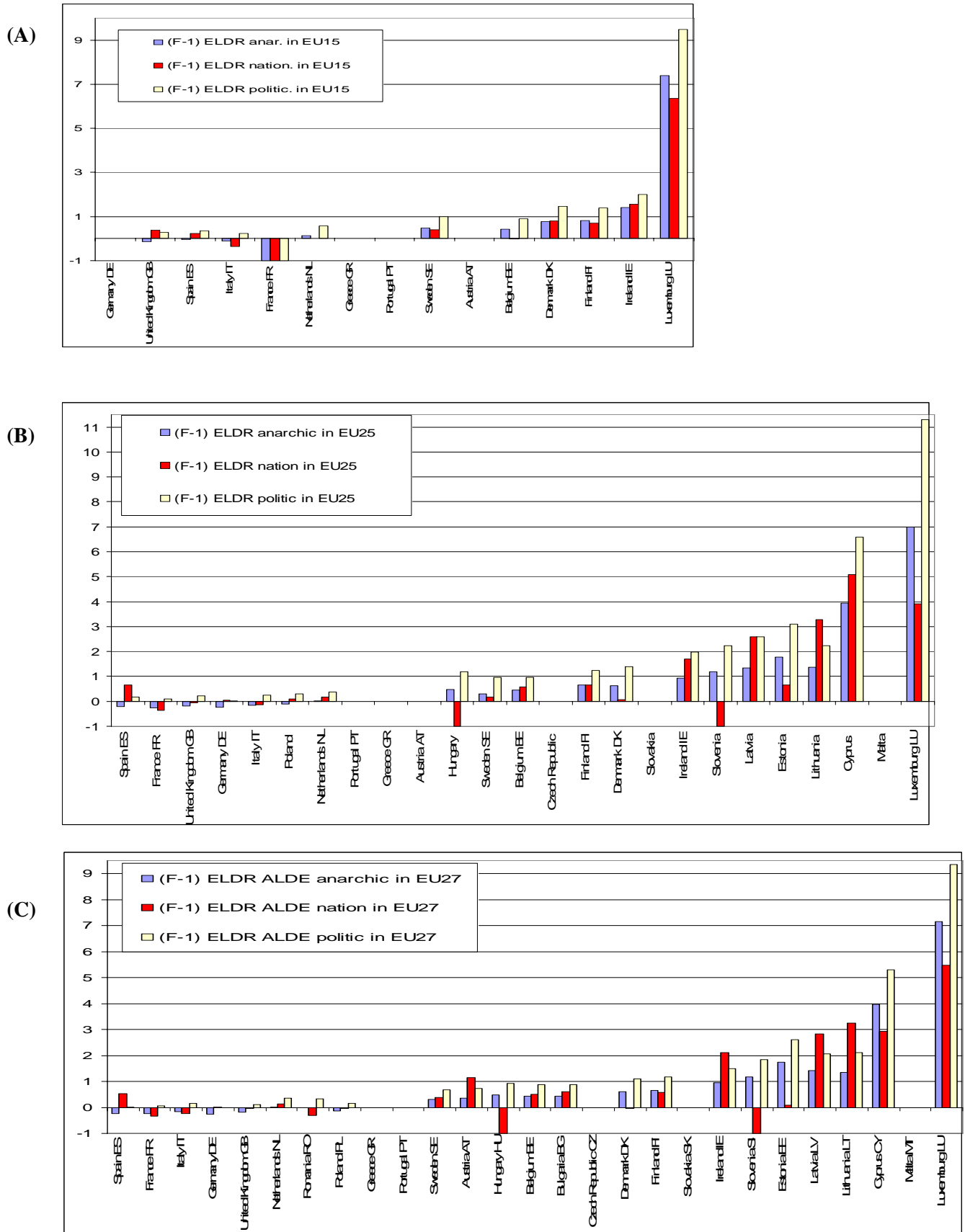
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Figure 2. The performance of the PSE in terms of representation in the three games(anarchic, nation, politic) in EU 15 (A), EU25 (B) and EU27 (C)



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Figure 3. The performance of the ELDR in terms of representation in the three games(anarchic, nation, politic) in EU 15 (A), EU25 (B) and EU27 (C)



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Let us now focus on the theoretical implications of the fact that cells' voting power in **the anarchic game**, in most cases, is the best conveyor of the voting rights of the electors: e.g., in terms of voting power, cells perform better than blocs. It seems that the claim that blocs are rationally formed and persist only when their voting power exceeds the sum of the voting powers of the individual members is not validated in the considered composite games under SMV.⁸ In either term, the cells of the two biggest political groups have generally a higher voting power in the anarchic than in the political and nation games. One may, thus, wonder why the cells of the biggest parties should merge in EP political groups at all. The explanations must be found outside the abstract rationality of the voting strategies. A first explanation may be that EP rules require that the representatives of the various countries **have to** merge into (political) groups, because offices in the various Committees and in the Assembly – and thus the agenda powers – for organizational reasons must be assigned to “groups”, according to the number of their members. Another explanation, perhaps of prior ranking, may be that logrolling may be much easier and transaction costs much lower within an organised group than for autonomous cells. Third, belonging to an important political group reinforces the domestic political image of some of the national cells adhering to them. In addition, several of the “anarchic” coalitions may appear irrelevant: indeed, in the political game, it may be irrational for the cells of a given political orientation to combat cells of the same political orientation by coalitions with cells of opposite political orientation.

4. CONCLUSIONS

The claim of unfairness for the electorate of small countries considered as a whole , assuming as benchmark the principle one person one vote, appears unjustified in terms of voting power in the EP both for the (composite) political game and for the (composite) Nations' game. Big countries have often an index of representation F_C lower than 1, whereas no electorate of the small countries has an $F_C < 1$. In terms of mere OPOV principle, the direction of claim of unfairness has to be reversed from the small to the biggest countries. Obviously, this unfairness may be justified by the need of protecting the structural

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minorities. Notice that actually the degressivity to population in the assignment of seats in the EP to the various countries was supported by the principle of protection of the minorities and a result in this direction has actually been achieved.

Nevertheless, also the claim that the "big parties of the big countries" have an unfair power in the EP is unjustified. Truly, the electors of the big countries voting for PPE-DE have their voting-rights better represented in terms of effective voting power than the voting weight assigned to their countries, but this does not mean that they are over represented in terms of OPOV. Moreover for the voters of the second biggest party, PSE, in big (and medium) countries, the voting power does not enhance the voting rights. And generally, in terms of $F_{i_{cp}}$, the small parties perform better in both terms. The results have similar trends in the two terms for the cells of the biggest party belonging to the big countries of the old EU of 15 member states: a not so obvious result, considering the great change in the composition of the EP. In the enlarged EU there is an overall reduction of the voting power of the electors of the EU 15. Nevertheless, by adopting the same degressive criterion previously adopted, the results in terms of voting powers and voting-rights favour the small countries. In general, the favour for small countries and for small parties, in terms of voting power, has increased after the enlargements. The remedy for the voters of the big countries does not seem merely that of voting for the biggest parties, but a more complex strategy. However the exploration of this aspect requires further research.

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APPENDIX.

The representation of power by the various cells in the EU games

Tables A1 to A3 reports for each game - respectively, the political, national, and anarchic game – for each term and enlargement the results in terms of the index of *equality of electoral rights of the citizens*, F_{icp} . The last column of each table reports the same index aggregate for each country. Notice that the results differ from Fedeli and Forte (2005) because here we do not refer to the electoral results, but to the rule assigning seats to a given population.

Table A1. Index of electoral voting rights of the citizens F_{icp} and F_C in EU 15

country		PPE-DE	PSE	ELDR	Verts/ALE	GUE/NLG	UEN	EDD	NI	F_COUNTRY
Austria AT	<i>F_anarchic</i>	1.5325	1.5325		1.5116				1.5213	1.528
Austria AT	<i>F_nation</i>	1.4210	1.4210		0				1.9894	1.421
Austria AT	<i>F_politic</i>	1.5325	0.8080		1.9504				2.5160	1.565
Belgium BE	<i>F_anarchic</i>	1.4391	1.4330	1.4330	1.4435				1.4238	1.437
Belgium BE	<i>F_nation</i>	1.6228	0.9737	0.9737	1.3910				2.4342	1.363
Belgium BE	<i>F_politic</i>	1.4544	0.7532	1.8923	1.9028				2.1127	1.580
Denmark DK	<i>F_anarchic</i>	1.8085	1.7709	1.7709		1.8085	1.8085	1.7803		1.780
Denmark DK	<i>F_nation</i>	1.5825	1.8839	1.8085		1.5825	1.5825	1.4129		1.681
Denmark DK	<i>F_politic</i>	1.6955	0.9420	2.4491		2.2607	2.8259	1.1303		1.801
Finland FI	<i>F_anarchic</i>	1.8155	1.8232	1.8155	1.8038	1.8620				1.818
Finland FI	<i>F_nation</i>	1.6991	2.1336	1.6991	1.0474	2.0948				1.724
Finland FI	<i>F_politic</i>	1.8388	0.9698	2.3974	2.3275	2.3275				1.942
France FR	<i>F_anarchic</i>	0.8780	0.8784		0.8675	0.8709	0.8675	0.8675	0.8721	0.874
France FR	<i>F_nation</i>	0.9044	0.8633		0.7014	1.0370	2.1041	0.7014	0.9506	0.917
France FR	<i>F_politic</i>	0.8807	0.4732		1.2613	1.2484	1.3658	1.7411	1.2597	1.022
Germany DE	<i>F_anarchic</i>	0.78016	0.73368		0.71330	0.71168				0.756
Germany DE	<i>F_nation</i>	1.41848	0		0	0				0.759
Germany DE	<i>F_politic</i>	0.82203	0.42442		0.91710	0.85401				0.688
Greece GR	<i>F_anarchic</i>	1.3955	1.3955			1.3998				1.397
Greece GR	<i>F_nation</i>	1.2174	1.2174			1.5652				1.315
Greece GR	<i>F_politic</i>	1.4153	0.7423			1.6797				1.247
Ireland IE	<i>F_anarchic</i>	2.3453	2.4054	2.4054	2.3302		2.3553			2.355
Ireland IE	<i>F_nation</i>	1.5034	2.5558	2.5558	3.7585		2.1047			2.185
Ireland IE	<i>F_politic</i>	2.3754	1.2027	3.0068	3.0068		1.8542			2.215
Italy IT	<i>F_anarchic</i>	0.9168	0.8961	0.8926	0.8784	0.8879	0.8898		0.8913	0.902
Italy IT	<i>F_nation</i>	1.3785	0.5419	0.6517	0.8784	0.2928	0.8671		0.7883	0.938
Italy IT	<i>F_politic</i>	0.8951	0.4959	1.2326	1.1335	1.0296	1.8135		1.2210	1.014
Luxemburg LU	<i>F_anarchic</i>	8.1339	8.1339	8.3963	8.3963					8.221
Luxemburg LU	<i>F_nation</i>	7.6091	7.6091	7.3467	7.3467					7.522
Luxemburg LU	<i>F_politic</i>	8.1339	4.4605	10.4953	5.2477					6.822
Netherlandsnl	<i>F_anarchic</i>	0.9930	1.1899	1.1351	1.3404	1.0000		1.0000		1.160
Netherlandsnl	<i>F_nation</i>	1	1	1	1	1		1		1.053
Netherlandsnl	<i>F_politic</i>	1.0070	0.6329	1.5676	1.7234	1.2500		0.8511		1.210
Portugal PT	<i>F_anarchic</i>	1.4729	1.4807			1.4572	1.4572			1.474
Portugal PT	<i>F_nation</i>	0.6476	1.4494			2.9144	2.9144			1.395
Portugal PT	<i>F_politic</i>	1.4938	0.7834			1.5512	3.4785			1.316
Spain ES	<i>F_anarchic</i>	0.9763	0.9712	0.9559	0.9610	0.9610			0.9763	0.972
Spain ES	<i>F_nation</i>	1.0242	0.4678	1.2407	2.1814	2.1814			3.7221	1.013
Spain ES	<i>F_politic</i>	0.9283	0.5288	1.3627	1.2356	1.2051			1.3424	0.842
Sweden SE	<i>F_anarchic</i>	1.4653	1.4609	1.4686	1.4453	1.4609				1.462
Sweden SE	<i>F_nation</i>	1.4387	1.3055	1.3987	1.6784	1.1190				1.373
Sweden SE	<i>F_politic</i>	1.4653	0.7771	1.9815	1.8649	1.9582				1.475
United Kingdom GB	<i>F_anarchic</i>	0.8955	0.8854	0.8667	0.8634			0.8542	0.8542	0.884
United Kingdom GB	<i>F_nation</i>	0.9323	0.5089	1.3878	1.5247			1.5155	1.5155	0.912
United Kingdom GB	<i>F_politic</i>	0.8756	0.4905	1.2876	1.1573			1.1022	1.2675	0.829

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Table A2. Index of electoral voting rights of the citizens F_{iCP} and F_C in EU 25

25		PPE-DE	PSE	ELDR	VERTS-ALE	GUE-NLG	IND-DEM	UEN	NI	F_COUNTRY
Austria AT	<i>F_anarchic</i>	1.385	1.392		1.385				1.367	1.385
Austria AT	<i>F_nation</i>	1.026	1.450		1.026				2.051	1.362
Austria AT	<i>F_politic</i>	1.367	0.879		1.538				2.051	1.310
Belgium BE	<i>F_anarchic</i>	1.441	1.448	1.441	1.441				1.423	1.441
Belgium BE	<i>F_nation</i>	1.583	1.753	1.583	0.694				0.462	1.419
Belgium BE	<i>F_politic</i>	1.423	0.915	1.957	1.601				2.135	1.512
Cyprus	<i>F_anarchic</i>	5.062		4.935		5.125				5.062
Cyprus	<i>F_nation</i>	6.074		6.074		3.037				5.062
Cyprus	<i>F_politic</i>	5.062		7.592		5.694				5.694
Czech Republic	<i>F_anarchic</i>	1.475	1.467			1.467	1.413		1.413	1.467
Czech Republic	<i>F_nation</i>	2.476	0.000			0.000	0.000		0.000	1.444
Czech Republic	<i>F_politic</i>	1.475	1.087			1.630	2.173		2.173	1.539
Denmark DK	<i>F_anarchic</i>	1.559	1.607	1.619	1.559	1.559	1.559	1.559		1.593
Denmark DK	<i>F_nation</i>	1.919	1.631	1.079	1.919	1.919	1.919	1.919		1.576
Denmark DK	<i>F_politic</i>	1.199	0.959	2.398	1.199	1.199	2.398	3.597		1.713
Estonia	<i>F_anarchic</i>	2.670	2.738	2.773						2.738
Estonia	<i>F_nation</i>	3.286	3.286	1.643						2.738
Estonia	<i>F_politic</i>	2.054	2.054	4.108						2.738
Finland FI	<i>F_anarchic</i>	1.674	1.653	1.662	1.612	1.612				1.656
Finland FI	<i>F_nation</i>	1.612	2.149	1.662	0.868	0.868				1.639
Finland FI	<i>F_politic</i>	1.550	1.240	2.232	1.240	1.240				1.683
France FR	<i>F_anarchic</i>	0.745	0.762	0.743	0.740	0.731	0.731	0.744		0.750
France FR	<i>F_nation</i>	0.419	0.996	0.648	0.795	0.786	0.786	0.681		0.761
France FR	<i>F_politic</i>	0.742	0.531	1.097	0.640	0.731	0.914	1.097		0.738
Germany DE	<i>F_anarchic</i>	0.819	0.759	0.753	0.751	0.753				0.787
Germany DE	<i>F_nation</i>	1.035	0.316	1.038	0.559	1.038				0.806
Germany DE	<i>F_politic</i>	0.905	0.506	1.030	1.194	0.871				0.857
Greece GR	<i>F_anarchic</i>	1.3612	1.3567			1.3567	1.3064			1.3567
Greece GR	<i>F_nation</i>	1.2151	1.0049			2.0099	2.7133			1.3399
Greece GR	<i>F_politic</i>	1.3704	0.8793			1.5074	2.0099			1.2562
Hungary	<i>F_anarchic</i>	1.485	1.487	1.481						1.485
Hungary	<i>F_nation</i>	2.691	0.000	0.000						1.458
Hungary	<i>F_politic</i>	1.434	0.975	2.194						1.325
Ireland IE	<i>F_anarchic</i>	2.001	1.941	1.941		1.941	1.941	2.016		1.987
Ireland IE	<i>F_nation</i>	2.031	2.688	2.688		2.688	2.688	1.157		1.964
Ireland IE	<i>F_politic</i>	2.091	1.493	2.987		1.493	2.987	2.240		2.183
Italy IT	<i>F_anarchic</i>	0.855	0.846	0.847	0.842	0.847	0.842	0.846	0.842	0.849
Italy IT	<i>F_nation</i>	1.048	0.795	0.863	0.437	0.722	0.811	0.756	0.811	0.865
Italy IT	<i>F_politic</i>	0.832	0.546	1.248	0.936	0.980	1.092	0.970	1.092	0.896
Latvia	<i>F_anarchic</i>	2.392		2.332	2.332			2.422		2.392
Latvia	<i>F_nation</i>	1.196		3.588	3.588			2.646		2.372
Latvia	<i>F_politic</i>	2.392		3.588	1.794			2.691		2.591
Lithuania	<i>F_anarchic</i>	2.355	2.355	2.367				2.355		2.361
Lithuania	<i>F_nation</i>	0.000	0.000	4.286				0.000		2.308
Lithuania	<i>F_politic</i>	2.616	1.744	3.239				2.616		2.817
Luxemburg LU	<i>F_anarchic</i>	8.190	7.985	7.985	7.985					8.088
Luxemburg LU	<i>F_nation</i>	11.466	4.914	4.914	4.914					8.190
Luxemburg LU	<i>F_politic</i>	8.190	6.142	12.285	6.142					8.190
Malta	<i>F_anarchic</i>	7.804	7.707							7.746
Malta	<i>F_nation</i>	0.000	12.717							7.630
Malta	<i>F_politic</i>	8.671	5.780							6.937
Netherlands NL	<i>F_anarchic</i>	1.0422	1.0422	1.0290	1.0367	1.0367	1.0367			1.0381
Netherlands NL	<i>F_nation</i>	1.1300	1.1300	1.1826	0.4992	0.9983	0.9983			1.0267
Netherlands NL	<i>F_politic</i>	0.9873	0.6582	1.3823	0.9599	1.1519	1.1519			0.9955
Poland	<i>F_anarchic</i>	0.891	0.882	0.882			0.882	0.887	0.882	0.886
Poland	<i>F_nation</i>	1.063	0.768	1.095			0.791	0.626	0.730	0.878
Poland	<i>F_politic</i>	0.895	0.572	1.307			0.784	0.840	1.307	0.896
Portugal PT	<i>F_anarchic</i>	1.436	1.439			1.412				1.434
Portugal PT	<i>F_nation</i>	0.753	1.695			2.260				1.412
Portugal PT	<i>F_politic</i>	1.412	0.883			1.412				1.148
Slovakia	<i>F_anarchic</i>	1.6241	1.6041					1.6041		1.6155
Slovakia	<i>F_nation</i>	2.7820	0.0000					0.0000		1.5897
Slovakia	<i>F_politic</i>	1.6542	1.2030					2.4061		1.7186
Slovenia	<i>F_anarchic</i>	2.188	2.107	2.188						2.177
Slovenia	<i>F_nation</i>	3.769	0.000	0.000						2.154
Slovenia	<i>F_politic</i>	2.026	1.621	3.242						2.316
Spain ES	<i>F_anarchic</i>	0.811	0.811	0.799	0.789	0.769				0.809
Spain ES	<i>F_nation</i>	0.552	0.552	1.657	3.313	3.313				0.798
Spain ES	<i>F_politic</i>	0.789	0.542	1.183	0.789	0.592				0.690
Sweden SE	<i>F_anarchic</i>	1.311	1.311	1.305	1.272	1.321	1.305			1.308
Sweden SE	<i>F_nation</i>	1.409	1.409	1.174	0.000	1.762	1.174			1.298
Sweden SE	<i>F_politic</i>	1.370	0.783	1.957	0.979	1.468	1.631			1.339
United Kingdom GB	<i>F_anarchic</i>	0.837	0.826	0.823	0.812	0.788	0.821	0.818		0.827
United Kingdom GB	<i>F_nation</i>	1.112	0.593	0.939	0.133	0.666	0.903	0.333		0.841
United Kingdom GB	<i>F_politic</i>	0.822	0.542	1.212	0.727	0.606	0.826	1.212		0.816

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Table A3. Index of electoral voting rights of the citizens F_{iCP} and F_C in EU 27

		PPE-DE	PSE	ELDR ALDE	UEN	VERTS- ALE	GUE- NLG	IND- DEM	ITS	NI	F_COUNTRY
Austria AT	<i>F_anarchic</i>	1.3566	1.3581	1.3566		1.3566			1.3566	1.3566	1.357
Austria AT	<i>F_nation</i>	0.8972	1.2305	2.1533		2.1533			2.1533	2.1533	1.376
Austria AT	<i>F_politic</i>	1.2740	0.9229	1.7227		1.2382			1.0767	3.1223	1.250
Belgium BE	<i>F_anarchic</i>	1.4211	1.4227	1.4211		1.4211			1.4211		1.422
Belgium BE	<i>F_nation</i>	1.5038	1.7723	1.5038		0.5639			0.3760		1.363
Belgium BE	<i>F_politic</i>	1.3346	0.9667	1.8798		1.2970			1.5790		1.391
Bulgaria BG	<i>F_anarchic</i>	1.4346	1.4346	1.4346					1.4346		1.435
Bulgaria BG	<i>F_nation</i>	1.5939	1.5939	1.5939					0.0000		1.328
Bulgaria BG	<i>F_politic</i>	1.3435	0.9791	1.8900					1.5939		1.436
Cyprus CY	<i>F_anarchic</i>	4.9549		4.9549			4.9549				4.955
Cyprus CY	<i>F_nation</i>	5.2432		3.9324			1.9662				3.932
Cyprus CY	<i>F_politic</i>	4.7189		6.2919			4.9155				5.047
Czech Republic CZ	<i>F_anarchic</i>	1.4598	1.4524				1.4524			1.4524	1.457
Czech Republic CZ	<i>F_nation</i>	2.4700	0.0000				0.0000	0.0000		0.0000	1.441
Czech Republic CZ	<i>F_politic</i>	1.3750	0.9798				1.5369	0.9221		3.3428	1.446
Denmark DK	<i>F_anarchic</i>	1.6003	1.6003	1.6003	1.6003	1.6003	1.6003	1.6003			1.600
Denmark DK	<i>F_nation</i>	2.5402	1.5241	0.9526	2.5402	2.5402	2.5402	2.5402			1.724
Denmark DK	<i>F_politic</i>	1.5241	1.0923	2.0957	1.7782	1.5241	1.5241	1.0161			1.515
Estonia EE	<i>F_anarchic</i>	2.75311	2.75311	2.75311							2.753
Estonia EE	<i>F_nation</i>	2.18501	2.91334	1.09250							2.185
Estonia EE	<i>F_politic</i>	2.62201	1.89367	3.60526							2.586
Finland FI	<i>F_anarchic</i>	1.6535	1.6535	1.6535		1.6535	1.6535				1.654
Finland FI	<i>F_nation</i>	1.6404	2.1872	1.5748		1.3123	1.3123				1.687
Finland FI	<i>F_politic</i>	1.5420	1.1373	2.1784		1.5748	1.5748				1.687
France FR	<i>F_anarchic</i>	0.7775	0.7932	0.7739		0.7717	0.7717	0.7717	0.7726		0.782
France FR	<i>F_nation</i>	0.4323	1.0471	0.6681		0.8166	0.8166	0.8166	0.6999		0.793
France FR	<i>F_politic</i>	0.7349	0.5887	1.0579		0.6431	0.7554	0.3879	0.8224		0.711
Germany DE	<i>F_anarchic</i>	0.8092	0.7530	0.7431		0.7454	0.7431				0.7784
Germany DE	<i>F_nation</i>	1.0219	0.3073	1.0098		0.5438	1.0098				0.7914
Germany DE	<i>F_politic</i>	0.8668	0.5302	0.9846		1.1011	0.7995				0.8229
Greece GR	<i>F_anarchic</i>	1.3433	1.3407				1.3394	1.3394			1.342
Greece GR	<i>F_nation</i>	1.1597	0.9302				1.8603	2.1261			1.240
Greece GR	<i>F_politic</i>	1.2660	0.9169				1.3288	0.8504			1.143
Hungary HU	<i>F_anarchic</i>	1.4764	1.4727	1.4701							1.474
Hungary HU	<i>F_nation</i>	2.6924	0.0000	0.0000							1.458
Hungary HU	<i>F_politic</i>	1.3911	1.0112	1.9251							1.293
Ireland IE	<i>F_anarchic</i>	1.9569	1.9569	1.9569	1.9569		1.9569	1.9569			1.957
Ireland IE	<i>F_nation</i>	1.8637	3.1062	3.1062	1.1648		3.1062	3.1062			2.031
Ireland IE	<i>F_politic</i>	1.8327	1.3978	2.4850	2.7567		1.8637	1.2425			2.091
Italy IT	<i>F_anarchic</i>	0.8383	0.8295	0.8288	0.8288	0.8252	0.8262		0.8252	0.8252	0.831
Italy IT	<i>F_nation</i>	1.0643	0.7953	0.7557	0.7557	0.9824	0.4678		0.9824	1.0916	0.856
Italy IT	<i>F_politic</i>	0.7941	0.5707	1.1638	0.3577	0.7532	0.8889		1.0152	2.2923	0.814
Latvia LV	<i>F_anarchic</i>	2.4140		2.4140	2.4140	2.4140					2.414
Latvia LV	<i>F_nation</i>	1.2773		3.8318	2.8739	3.8318					2.555
Latvia LV	<i>F_politic</i>	2.2991		3.0655	3.4007	2.2991					2.874
Lithuania LT	<i>F_anarchic</i>	2.3477	2.3477	2.3504	2.3477						2.349
Lithuania LT	<i>F_nation</i>	0.0000	0.0000	4.2589	0.0000						2.293
Lithuania LT	<i>F_politic</i>	2.2359	1.5838	3.1143	4.0060						2.881
Luxemburg LU	<i>F_anarchic</i>	8.156	8.156	8.156		8.156					8.156
Luxemburg LU	<i>F_nation</i>	10.789	6.473	6.473		6.473					8.631
Luxemburg LU	<i>F_politic</i>	7.768	5.826	10.357		7.768					7.876
Malta MT	<i>F_anarchic</i>	7.6741	7.6741								7.6741
Malta MT	<i>F_nation</i>	0.0000	12.1811								7.3087
Malta MT	<i>F_politic</i>	7.3087	5.2785								6.0905
Netherlandsnl	<i>F_anarchic</i>	1.025	1.025	1.024		1.024	1.024	1.024			1.025
Netherlandsnl	<i>F_nation</i>	1.161	1.161	1.138		0.406	0.813	0.813			0.993
Netherlandsnl	<i>F_politic</i>	0.964	0.697	1.349		0.955	1.016	0.691			0.948
Poland PL	<i>F_anarchic</i>	0.8801	0.8765	0.8750	0.8843			0.8750		0.8750	0.880
Poland PL	<i>F_nation</i>	0.6481	1.0802	0.9722	0.9375			0.9259		0.3472	0.862
Poland PL	<i>F_politic</i>	0.8287	0.6018	1.1527	1.3367			0.4398		2.4652	1.048
Portugal PT	<i>F_anarchic</i>	1.4124	1.4146				1.4099				1.4132
Portugal PT	<i>F_nation</i>	0.7460	1.6784				2.2379				1.3987
Portugal PT	<i>F_politic</i>	1.3303	0.9698				1.3801				1.1563
Romania RO	<i>F_anarchic</i>	1.0013	1.0028	1.0005					0.9995		1.001
Romania RO	<i>F_nation</i>	0.6170	1.4543	0.6941					0.9255		0.975
Romania RO	<i>F_politic</i>	0.9431	0.6875	1.3386					0.9651		0.950
Slovakia SK	<i>F_anarchic</i>	1.6097	1.6081							1.6081	1.609
Slovakia SK	<i>F_nation</i>	2.7120	0.0000							0.0000	1.550
Slovakia SK	<i>F_politic</i>	1.5155	1.1061							4.4669	2.060
Slovenia SI	<i>F_anarchic</i>	2.1670	2.1670	2.1670							2.167
Slovenia SI	<i>F_nation</i>	3.8697	0.0000	0.0000							2.211
Slovenia SI	<i>F_politic</i>	2.0208	1.5479	2.8378							2.187
Spain ES	<i>F_anarchic</i>	0.7884	0.7884	0.7761		0.7761	0.7761				0.787
Spain ES	<i>F_nation</i>	0.5389	0.5389	1.5398		3.2850	3.0797				0.776
Spain ES	<i>F_politic</i>	0.7468	0.5569	1.0163		0.6981	0.7391				0.670
Sweden SE	<i>F_anarchic</i>	1.3042	1.3042	1.3042		1.3042	1.3042	1.3042			1.304
Sweden SE	<i>F_nation</i>	1.3801	1.2421	1.3801		1.0351	1.5526	1.5526			1.362

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Sweden SE	<i>F_politic</i>	1.2248	0.8902	1.6906		1.2421	1.2938	0.8798			1.182
United Kingdom GB	<i>F_anarchic</i>	0.8198	0.8110	0.8059		0.8033	0.8033	0.8052	0.8033	0.8033	0.812
United Kingdom GB	<i>F_nation</i>	0.9917	0.6375	0.9563		0.5100	0.6375	0.7650	0.6375	0.8500	0.826
United Kingdom GB	<i>F_politic</i>	0.7745	0.5637	1.1157		0.7268	0.7650	1.6066	0.6375	2.2314	0.933

Looking at each country in terms of distribution of representation in the three games and at how it is changed with the elections (5th to 6th) and after the enlargement to two new countries (Romania and Bulgaria) and a new political group (ITS), it emerges that citizens from Irelands, Luxemburg, Estonia, Latvia, Cyprus are *always* over-represented by all cells in all games. There are no remarkable changes also for Malta (overrepresented on average, but the 2 big parties only system makes PPE_DE underrepresented in the national game) Lithuania (overrepresented on average, with ELDR winner in the national game over PPE-DE, PSE, UEN), Slovenia (with PPE-DE winner in the national game), Slovakia (showing marginal changes only from EU 25 to EU 27, and PSE looser in the national game), Czech Republic and Hungary (with PPE-DE winner in the national game) and Portugal (keeping the same structure even in EU 15 with different elections)

As for the new entries of EU 27, Romania has got the PSE cell vetoer in the nation game and ELDR cell is the only over representing its electors in the political game. Bulgaria is on average among those countries overrepresenting its electors with the exception of ITS in the nation game and PSE in the political game.

Poland is among the big countries with low power of representation. It is remarkably affected by the reshuffling from 25 to 27 EU member states due to internal mobility and in spite of the absence of seats in the new group ITS. With 25 EU countries, PPE overrepresented its electors in the national game only and ELDR in both the political and national game. In EU 27, UEN, ELDR and NI in the political game and PSE in the nation game have $F > 1$.

Going to the remaining countries, lets begin with the smallest (better represented) EU member states. All Finland cells in EU 27 over represent their electors, improving representation either with respect to EU 25 (when Verts and GUE cells' F were < 1 in the nation game) or with respect to EU 15 (when PSE's $F < 1$ in the political game). The Netherlands keep almost the same distribution in EU 27 and EU 25 with the only exception of the IND-DEM cell's F becoming < 1 in the political game. The changes with respect to EU 15 are remarkably affected by the electoral results.

Spain, among the biggest, on average, is the country less represented in EU 25 and EU 27 political games. In either case the F 's cells distribution is quite stable, whereas in EU15 the election and the different rule for seats' assignments determined a more favourable distribution of power. UK, France and Italy, with the same number of seats behave quite differently, although on average all of them underrepresent their citizen. UK in EU27 looses the representation of the PPE_DE in the nation game and increases the IND DEM in the political game. Notice, however that most cells' F are less than 1. Notice also that, in EU 15, UK was on average the second worst country, following Germany, with the two biggest cells' F being < 1 in games. As for France, notice the relevance of the ITS in EU 27. with the reshuffling determining the increasing PSE's F in the nation game. Notice futher that in EU 15 the number of cells with $F > 1$ was higher. Italy shows a similar distribution in EU

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25 and EU 27 mainly modified by some MEP movements to ITS. With respect to EU 15, notice the reduction of UEN's F becoming <1 in the political game. Finally, Germany the biggest and worst represented in EU 15 (when with the exception of the PPE_DE cell in the nation game all the cell's F were <1) gains positions after enlargements and elections. Yet the passage from EU25 to EU 27 does not affect the distribution.

¹ See also Laurelle and Widgren (1998).

² In particular, he discusses the no-show paradox by Fishburn and Brams (1983), Moulin (1988) and Berg and Nurmi (1988) according to which, whenever a group of voters would get a better outcome by not voting at all than by voting according to its true preferences, the votes cast by the group are wasted.

³ On this issue see also Riker and Brams (1973) and Coleman (1966) and Mueller (1967).

⁴ A number of indices of power are now available. Here we refer only to the Penrose index (also known as "absolute Banzhaf measure of power of influence") and Banzhaf index of power because the interpretation in terms of I -power given in Felsenthal and Machover (1998) fits quite well to Parliament of a union of states and not only to the ECM. On the basis of the results of Owen (1975 and 1982) it can directly be used in the analysis of compound voting games as in those depicted above. The other famous index by Shapley and Shubik (1954) often considered, is based on different assumption about the underlying game and more suitable when depicting those game where the concept of P -power – in the sense given in Felsenthal and Machover (1998) – applies.

⁵ The so called "equitability index", adopted by Felsenthal and Machover (2000), with the benchmark of hypothetical direct democracy, compares the direct-voting power of the electorate with the electorate's voting power in the EP obtained via their representatives. The fairness measure thus emerging in terms of hypothetical direct power of the electors may be questionable concept for the EP where "proportional representation", and not direct democracy, is the constitutional requirement.

⁶ Following Felsenthal and Machover's (1998) notation and definitions (in particular, see their definition 2.1.1 p.11, 2.3.2 p.23, and 2.3.14 p.29), recall that a simple voting game in a democratic body is defined as a collection W of subsets of voters $i = 1 \dots n$ of an assembly N , satisfying the following conditions: $N \in W$; $\emptyset \notin W$; if $X \subseteq Y \subseteq N$ and $X \in W$ then $Y \in W$. A proper voting game requires that if $X \in W$ and $Y \in W$, then $Y \cap X \neq \emptyset$. A set of voters M , subset of N , is a "coalition". M is a *winning* coalition if $M \in W$. If $M \notin W$ is a *losing* coalition. A voter i is said to be W -critical in $M \in W$ if $M - \{i\} \notin W$. If i is not critical in any M , i is a dummy in W .

⁷ Notice here that unlike Fedeli and Forte (2005) referred to the electoral results we refer to the population represented by each cell as obtained on the basis of the constitutional rule for seats' assignment.

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⁸ For a discussion of this point see Felsenthal and Machover (2001 and 2002).