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# Power analysis of the Nice Treaty on the future of European integration

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Power analysis of changes in voting weights and rules in the Nice Treaty is done by applying methods that use Shapley–Shubik and Banzhaf indices. Significant decreases in voting power of small countries make widening of integration more acceptable to incumbent members due to small size of the applicants. Relative increases in the conciliatory power of smaller members, and relative increases in the independent power of bigger members make smaller members compromise more, and improve the position of large members for further deepening of the integration. Lastly, the fairness analysis reveals a more federalist EU in the way votes are distributed.

## I. Introduction

The European Union leaders radically changed each member's weight and the voting rules in the EU's decision-making institutions in the Nice Treaty signed in February of 2001. This paper discusses these reforms, and analyses their implications for the future of European integration using power indices. The main question it tries to answer is: Do these changes imply a more acceptable widening, and an easier deepening of the integration in Europe? After all, the often-stated reason for calls for reforms in the voting system before Nice was the fear of a stall in the integration process. Did the EU leaders successfully prevent that in Nice?

The paper starts with an outline of the reforms in terms of realignment of voting weights, changes in voting rules, and the new areas where each voting rule applies in Section II.

Section III discusses the effects of the changes on the widening of the integration with the help of the Shapley–Shubik Index (1954) and the Banzhaf (1965) Index. Implications on costs of enlargement and power to be lost to new members are analysed for widening the integration to Central and Eastern European countries.

Section IV compares the changes in the independent versus conciliatory power coefficients of member countries. Relatively more conciliatory power implies members that are more willing to give compromises. Compromises are traditionally given when coalitions are formed to reach decisions. This section examines such implications of the reforms on the voting power of France, Germany and the Benelux countries, which historically pursued further deepening of the integration, relative to coalitions that will be formed against them.

Lastly, we examine what the reforms imply about the nature of the union in the future. German calls for a federal union, and the well-known British antipathy towards it makes this question an interesting one. Section V details the implications of the reforms on this issue, using a fairness analysis of distribution of votes.

Note that this paper does not analyse the effects of enlargement – the Eastern enlargement in particular – in the distribution of power within the EU. These are discussed in great detail in Hosli (1993), Widgren (1995) and Peters (1996a), and others. This paper analyses effects of the reforms on the future of European integration, including the implications for the Eastern enlargement. There is some recent research done using the reforms in Nice.

Leech (2001) examines how a fair voting system can be designed using the scenarios of enlargement envisaged by the Nice Treaty. Moberg (2002), Galloway (2001), and Felsenthal and Machover (2001a) draw attention to ambiguities in the Nice Treaty regarding the voting rules. Finally, Baldwin *et al.* (2001) emphasize the increasing importance of enhanced cooperation arrangements after analysing the ability of the EU's Commission, Council of Ministers and the European Parliament to affect EU decisions, in trying to answer if the Nice Treaty should be ratified. This paper analyses the voting power distribution among member states within the Council of Ministers, i.e. members' ability rather than that of institutions to affect the decisions, to examine the implications for the European integration.

The main finding is that the reforms were on target. Significant decreases were found in the voting power of small countries. Since most eastern applicants are small in size, this result implies lower costs of enlargement, and smaller loss of power to new members. Both make widening the integration much more acceptable to incumbent members. Furthermore, a relative increase was found in the conciliatory power of small countries, and a relative increase in the independent power of major EU countries such as France and Germany. These changes improve the power of proponents for further deepening the integration, and at the same time, make smaller countries more willing to give compromises in the coalitions that they form. Finally, fairness analysis finds a more federalist union after the Nice Treaty.

## II. Changes in Nice Treaty

Voting process in the EU involves three institutions: The European Parliament, where members' voting practice reflects ideology rather than nationality<sup>1</sup>; The European Commission, which has a supra-national view; and the Council of Ministers, where national interests are pursued. The primary decision-making body is the Council of Ministers.

The research done on this matter reflects this division of power<sup>2</sup>: the majority of work done is a voting power analysis of the Council of Ministers. Hosli (1995, 1996), Berg and Lane (1996), Peters (1996b), Laruelle and Widgren (1998), are such examples. Voting power analysis of the European Parliament has drawn much less attention (Hosli, 1997; Nurmi, 1997). Since this paper's topic is the influence of nationality, power distribution in the Council of Ministers is analysed.

In general, the outcome of a vote depends on three things: the voting rule, the voting weights, and each voter's behaviour. Analysis of voter behaviour is issue sensitive. Since preferences and agendas change frequently, an issue-by-issue approach is not always practical. Therefore, the analysis in this paper is based on power and satisfaction indices such as the Shapley–Shubik Index (1954) and the Banzhaf Index (1965). These indices do not model voters' behaviour, but they measure voters' potential ability to change the results. The probabilistic approach offered by these indices is quite effective.<sup>3</sup> Detailed motivation for using power indices in such analyses is given in Baldwin *et al.* (1997).

In the Council of Ministers, the most practised rule is qualified majority; unanimity is required only on important issues.<sup>4</sup> The Nice Treaty expanded the use of the qualified majority rule: it will now be used in decisions regarding trade negotiations, certain aspects of visa, asylum and immigration policies, and structural spending for the EU's poor regions. Unanimity is still required on issues regarding taxation and social security after UK and Swedish opposition to the adoption of majority rule. Furthermore, unanimity is the rule in trade negotiations involving cultural and audiovisual issues, human health and education services in the light of French opposition, and in defence and military issues after UK, Irish, Swedish, Finnish and Austrian objections.

The Nice Treaty defines the qualified majority as follows<sup>5</sup>:

Acts of the Council shall require for their adoption at least 258<sup>6</sup> votes in favour, cast by a majority

<sup>1</sup> Election process to the European Parliament and groups formed within or after the elections are based on ideology.

<sup>2</sup> For more on the division of power among EU institutions, refer to Laruelle and Widgren (1997).

<sup>3</sup> There has been some criticism of using power indices to study the EU by Garrett and Tsebelis (1999). Discussion of this criticism can be found in Lane and Berg (1999), and Felsenthal and Machover (2001b).

<sup>4</sup> Hosli (1993) gives the areas that require each voting rule prior the Nice reforms.

<sup>5</sup> This is the voting rule for the usual procedure, where the proposal comes from the Commission. Under rare circumstances, decisions are taken outside this procedure. Therefore, the analysis is confined to this normal procedure.

<sup>6</sup> Galloway (2001) observes that while 258 is observed in the main body of the treaty, a quota of 255 appears in the declaration annexed to the treaty. He concludes that the latter is purely political rather than a legally binding statement. This view is also shared by Felsenthal and Machover (2001a). However, Moberg (2002) claims that the order of texts show that 255 should be the binding one. In this analysis, calculations have been made using both: although the numbers change, the main conclusions drawn in this paper are still valid on both cases. The calculations presented use 258, which is '[what] appears to be prescribed in the Nice Treaty' according to Felsenthal and Machover (2001a).

Table 1. Distribution of votes in the Council of Ministers of the EU

	1958–1973	1973–1981	1981–1985	1986–1995	1995–2000	Pre-Nice	Post-Nice
Belgium	2 (11.76%)	5 (8.62%)	5 (7.94%)	5 (6.58%)	5 (3.70%)	5 (3.70%)	12 (3.48%)
Luxembourg	1 (5.88%)	2 (3.45%)	2 (3.17%)	2 (2.63%)	2 (1.48%)	2 (1.48%)	4 (1.16%)
France	4 (23.53%)	10 (17.24%)	10 (15.87%)	10 (13.16%)	10 (7.41%)	10 (7.41%)	29 (8.41%)
Germany	4 (23.53%)	10 (17.24%)	10 (15.87%)	10 (13.16%)	10 (7.41%)	10 (7.41%)	29 (8.41%)
The Netherlands	2 (11.76%)	5 (8.62%)	5 (7.94%)	5 (6.58%)	5 (3.70%)	5 (3.70%)	13 (3.77%)
Italy	4 (23.53%)	10 (17.24%)	10 (15.87%)	10 (13.16%)	10 (7.41%)	10 (7.41%)	29 (8.41%)
The UK		10 (17.24%)	10 (15.87%)	10 (13.16%)	10 (7.41%)	10 (7.41%)	29 (8.41%)
Denmark		3 (5.17%)	3 (4.76%)	3 (3.95%)	3 (2.22%)	3 (2.22%)	7 (2.03%)
Ireland		3 (5.17%)	3 (4.76%)	3 (3.95%)	3 (2.22%)	3 (2.22%)	7 (2.03%)
Greece			5 (7.94%)	5 (6.58%)	5 (3.70%)	5 (3.70%)	12 (3.48%)
Spain				8 (10.53%)	8 (5.93%)	8 (5.93%)	27 (7.83%)
Portugal				5 (6.58%)	5 (3.70%)	5 (3.70%)	12 (3.48%)
Austria					4 (2.96%)	4 (2.96%)	10 (2.90%)
Sweden					4 (2.96%)	4 (2.96%)	10 (2.90%)
Finland					3 (2.22%)	3 (2.22%)	7 (2.03%)
The Czech Rep.						5 (3.70%)	12 (3.48%)
Poland						8 (5.93%)	27 (7.83%)
Hungary						5 (3.70%)	12 (3.48%)
Slovenia						3 (2.22%)	4 (1.16%)
Estonia						3 (2.22%)	4 (1.16%)
Cyprus						2 (1.48%)	4 (1.16%)
Malta						2 (1.48%)	3 (0.87%)
Bulgaria						4 (2.96%)	10 (2.90%)
Romania						7 (5.19%)	14 (4.06%)
The Slovak Rep.						3 (2.22%)	7 (2.03%)
Latvia						3 (2.22%)	4 (1.16%)
Lithuania						3 (2.22%)	7 (2.03%)
Total	17	58	63	76	87	135	345
Q. Majority	12 (70.6%)	41 (70.7%)	45 (71.4%)	54 (71.1%)	62 (71.3)	96 (71%)	258 (74.8%)

of members, where this Treaty requires them to be adopted on a proposal from the Commission.

...

When a decision is to be adopted by the Council by a qualified majority, a member of the Council may request verification that the member States constituting the qualified majority represent at least 62% of the total population of the Union. If that condition is shown not to have met, the decision in question shall not be adopted.<sup>7</sup>

Note first that, the Nice Treaty requires triple majority for proposals to be adopted: In addition to the traditional condition, where the number of votes need to exceed a given threshold, now, adoption of a proposal also requires a simple majority of member countries, as well as a super majority of at least 62% of the population. Felsenthal and Machover (2001a)

analyse the implications of the last two majority conditions. They find that the simple majority requirement is vacuous, and that the population requirement is nugatory. They prove that the voting can be recast as a pure weighted rule described by the traditional condition. Secondly, the Nice Treaty changed the threshold to around 75% from the previous 71%.<sup>8</sup>

However, the primary change in Nice was not the voting rule, but the realignment of the voting weights. Voting weight is simply the share of a member's votes in total. The new and past distribution of votes and voting weights are given in Table 1. One important observation in Table 1 is that the methodology used in assigning votes to members had not changed since 1973, despite the EU having experienced three enlargements since then. Consequently, voting weights had changed only when new members joined, each receiving the number of votes implied by the

<sup>7</sup> Official Journal of the European Communities, C 80, p. 82.

<sup>8</sup> This threshold is the percentage that will be used when the accession of all 12 applicants is complete. The Nice Treaty leaves the threshold for the interim steps ambiguous, although it sets minimum and maximum thresholds, which are both above the traditional 71%.

original system.<sup>9</sup> Only in the wake of Eastern enlargement did the EU decide to change the system, which changed not only future members' but also incumbent members' votes and voting weights.

The next three sections analyse the implications of these reforms for the widening and deepening of the integration, and the degree of federalism in the EU.

### III. Widening the Integration

Voting weight allocation before Nice strongly favoured small member states (Widgren, 1995).<sup>10</sup> Small member states used to get more votes relative to their population, the opposite applying for large member states. Candidates in the Eastern enlargement are smaller than the EU average. Before Nice, this created concerns for incumbent members, especially large ones, which feared too much loss of power to small eastern countries and the potential implications for the costs of enlargement as mentioned in Kandogan (2000).

Voting weights are poor measures of member countries' influence on EU decisions. This influence, or voting power, is defined as the probability that a country exerts power in all possible coalitions. In other words, the number of times in all outcomes a country's vote is crucial – i.e. it turns a losing coalition into a winning one – shows that country's power. Extensive non-technical explanation of voting power is given in Felsenthal and Machover (2000). Voting power of a country  $i$  in a group of  $n$  countries is formulated below, following Owen (1972):

$$\text{Voting power}_i^n = \sum_{S \in M_i} \prod_{k \in S - \{i\}} x_k \prod_{j \in N - S} (1 - x_j) \quad (1)$$

where  $S$  is any coalition of  $s$  countries.  $M_i$  are the winning coalitions, in which country  $i$  is crucial.  $N$  is the set of all  $n$  countries, and  $x_k$  is the probability that country  $k$  votes in favour of the proposal in question. Distribution of  $x_k$ s defines how coalitions are formed. There are two standard assumptions regarding coalition formation: independence and homogeneity (Straffin, 1988).

The independence assumption yields the absolute<sup>11</sup> Banzhaf Index (BI), where  $x_k$ s are independently

uniformly distributed on  $[0, 1]$ . Each outcome has equal probability of occurring. All combinations of coalitions have equal probability of formation:

$$BI_i^n = \sum_{S \in M_i} \left(\frac{1}{2}\right)^{n-1} \quad (2)$$

Homogeneity gives the Shapley–Shubik Index (SSI), where there is a common standard by which voters evaluate each outcome, and thus the probabilities of voters' decisions are correlated (Straffin, 1988), i.e.  $x_k = x$ , and  $x$  is uniformly distributed on  $[0, 1]$ . Under homogeneity, all sizes of coalitions are equally possible, and all different coalitions of a certain size have equal probability of formation. In other words, all permutations of coalitions are equally likely:

$$SSI_i^n = \sum_{S \in M_i} \frac{(n-s)!(s-1)!}{n!} \quad (3)$$

Independence assumes no communication, whereas homogeneity assumes some communication or reconciliation between voters. This is why Straffin (1988) conjectures that the SSI is more appropriate in the analysis of voting bodies with considerable communication between voters, and compromises after a bargaining process. Felsenthal and Machover (1998) give detailed technical explanation of these indices.

Table 2 gives the ratio of voting power to population weight before and after Nice to reveal the bias towards smaller countries. Applicant and member countries are ordered from the smallest, Malta, to the largest, Germany, in terms of population weights. With the exception of 6 or 7 big countries, all countries enjoy higher voting power than their population implies. Clearly, small countries are favoured in the distribution of votes before and after Nice. However, changes in the ratios show that after Nice, small countries experienced a decrease in their voting power, whereas large countries gained. Now, the number of votes assigned better reflects the population size.

These results are fortified by the regressions given in Table 3, where voting power of each country, measured by SSI or BI, is regressed against its population weight in the EU, separately before and after the Nice IGC. After Nice,  $R^2$  increases, intercepts get closer to zero, the coefficients of the population weight approach zero, and  $t$ -statistics for the

<sup>9</sup> Widgren (1994) observes a logarithmic relation between population size and number of votes assigned in the Council of Ministers. This formula deduced before the 1995 EU enlargement has been tested and found successful by Hosli and Wolfenbittel (2001). Therefore, pre-Nice distribution of votes in Table 1 is determined according to Widgren.

<sup>10</sup> Here and elsewhere, by 'favour', is meant a distribution of votes, where small member states get more votes than implied by their population.

<sup>11</sup> The absolute Banzhaf Index produces numbers that do not sum to 1. In the rest of the paper, these numbers are normalized to obtain relative Banzhaf Indices that measure relative voting power.



Table 2. Ratio of voting power to population weight

Country	Pop. Weight (PW)	Pre-Nice SSI/PW	Post-Nice SSI/PW	Pre-Nice BI/PW	Post-Nice BI/PW
<b>Malta</b>	<b>0.08%</b>	<b>18.28</b>	<b>10.67</b>	<b>19.81</b>	<b>12.06</b>
Luxembourg	0.09%	16.04	12.59	17.38	14.04
<b>Cyprus</b>	<b>0.16%</b>	<b>9.11</b>	<b>7.15</b>	<b>9.87</b>	<b>7.97</b>
<b>Estonia</b>	<b>0.30%</b>	<b>7.21</b>	<b>3.77</b>	<b>7.74</b>	<b>4.20</b>
<b>Slovenia</b>	<b>0.41%</b>	<b>5.24</b>	<b>2.74</b>	<b>5.62</b>	<b>3.05</b>
<b>Latvia</b>	<b>0.51%</b>	<b>4.28</b>	<b>2.24</b>	<b>4.59</b>	<b>2.49</b>
<b>Lithuania</b>	<b>0.77%</b>	<b>2.81</b>	<b>2.55</b>	<b>3.02</b>	<b>2.86</b>
Ireland	0.78%	2.77	2.51	2.98	2.82
Finland	1.07%	2.01	1.83	2.16	2.05
Denmark	1.11%	1.95	1.77	2.10	1.99
<b>The Slovak Rep.</b>	<b>1.12%</b>	<b>1.93</b>	<b>1.75</b>	<b>2.07</b>	<b>1.96</b>
Austria	1.68%	1.73	1.68	1.83	1.85
<b>Bulgaria</b>	<b>1.71%</b>	<b>1.71</b>	<b>1.65</b>	<b>1.81</b>	<b>1.82</b>
Sweden	1.84%	1.58	1.53	1.67	1.69
Portugal	2.08%	1.76	1.64	1.84	1.79
<b>Hungary</b>	<b>2.09%</b>	<b>1.75</b>	<b>1.63</b>	<b>1.82</b>	<b>1.77</b>
Belgium	2.13%	1.72	1.60	1.79	1.75
<b>The Czech Rep.</b>	<b>2.14%</b>	<b>1.71</b>	<b>1.59</b>	<b>1.78</b>	<b>1.74</b>
Greece	2.19%	1.67	1.55	1.74	1.69
The Netherlands	3.28%	1.11	1.12	1.16	1.21
<b>Romania</b>	<b>4.67%</b>	<b>1.12</b>	<b>0.86</b>	<b>1.11</b>	<b>0.92</b>
<b>Poland</b>	<b>8.03%</b>	<b>0.75</b>	<b>0.99</b>	<b>0.73</b>	<b>0.92</b>
Spain	8.19%	0.73	0.98	0.71	0.90
Italy	11.98%	0.64	0.72	0.58	0.64
France	12.18%	0.63	0.71	0.57	0.63
The UK	12.36%	0.62	0.70	0.56	0.62
Germany	17.06%	0.45	0.51	0.41	0.45

Note: Bold entries denote applicant countries.

Table 3. Regression results

Power index	Period	Constant	Log (Population weight)	Adj. $R^2$
SSI	Pre-Nice	-0.86 (-22.66)	0.35 (17.35)	0.92
	Post-Nice	-0.67 (-14.14)	0.48 (19.26)	0.94
BI	Pre-Nice	-0.91 (-28.40)	0.31 (18.51)	0.88
	Post-Nice	-0.73 (-18.14)	0.44 (20.39)	0.94

intercepts go down, whereas those for the population weight go up. When BI is used to measure voting power, the changes observed are more pronounced. Apparently, the changes had a more significant effect on countries' independent power than their conciliatory power measured by SSI.

An interesting observation is the position of applicant countries relative to incumbent members. The changes in power to population weight ratios, and the average changes applied to incumbent members are given in Fig. 1. The decrease in applicant countries' ratio is far greater than that of small

incumbent members with similar population, except the biggest applicant, Poland. Malta, Estonia, Slovenia, Latvia and Romania had the worst treatment. The fact that the applicant countries were not part of the negotiations in Nice when the new voting weights were decided makes this observation interesting.

Kandogan (2000) analyses the relation between voting power and budgetary costs of enlargements. He finds that a country's voting power and the power of the coalition it is part of are critical in explaining its receipts from the EU budget. To reduce the costs of Eastern enlargement, he suggests that votes need to be redistributed more proportionally to population, and the threshold needs to be lowered. At Nice, the first suggestion is carried out, but contrary to the second suggestion, the EU increased the number of votes to obtain a qualified majority, from around 71% to 75%. Despite this, the reweighing of votes in Nice still reduced applicant countries' voting power, and because of that, the coalitions they may be part of have less power. Thus, the budgetary cost of Eastern enlargement is expected to be much lower than the pre-Nice vote distribution implied.

Using SSI, the total power loss to applicant countries upon membership was 35.1% of the potential power of all EU before Nice, and it is 30.9% after.

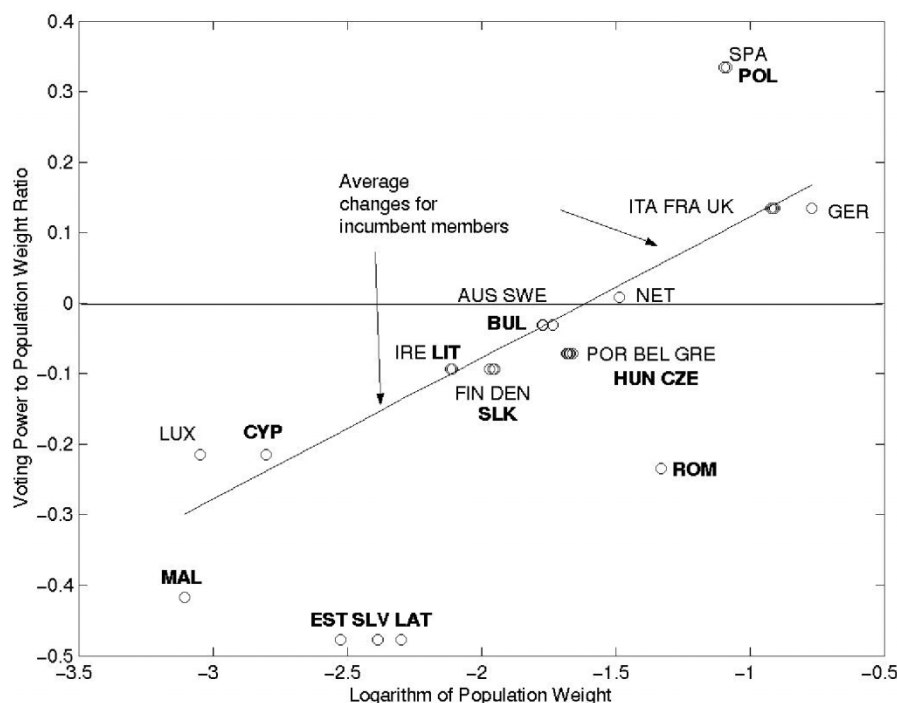


Fig. 1. Effects on applicant countries

If BI is used to measure power, the loss goes down from 36.4% to 32.6%. These are significant decreases achieved only by the realignment of voting weights. Fear of losing power could also be remedied by lowering the required number of votes for majority or by increasing the number of issues requiring qualified majority rather than unanimity.<sup>12</sup> Although the Nice treaty increased the threshold, it adopted the qualified majority rule for more issues, which helps reduce the loss of power to new members on decisions regarding those issues.

In sum, the new allocation of voting weights will likely reduce the costs of enlargement. This and the fact that there is a decrease in loss of power to new members make the enlargement, the widening part of integration easier and more acceptable to the incumbent members.

#### IV. Deepening the Integration

This section exploits the differences in assumptions used in getting the power indices to analyse the effects of the Nice Treaty on the future of deepening the European integration. SSI index measures power

of countries when all countries act conciliatory. BI assumes that all countries act independently. The power coefficient, which is the ratio between these indices and voting weight, measures a country's power relative to its voting weight. Comparison of power coefficients using SSI, and BI, tells whether a country will act in a more conciliatory way by forming coalitions, or act more independently on its own. Since the power indices sum to 1 across countries, while some countries will lose their independent power relative to their conciliatory power, some will gain. As a result, some countries will try to form coalitions, whereas some will act independently. This makes measuring voting power of countries using SSI or BI infeasible, since both require that all countries behave in a similar fashion. Therefore, in this section, we develop a simple index that measures the power of countries under partial homogeneity, where blocs of countries vote independently, and within-bloc decisions are taken in a conciliatory way.

Table 4 gives the changes in power coefficients computed using SSI and BI after the Nice Treaty. The effects on small countries and large countries are different. Small member countries, like Luxembourg,

<sup>12</sup> The idea is simple: when the threshold is 100%, all members have equal relative power. As the threshold is lowered small member states become less crucial in the outcome; and they lose power. In turn, bigger member states gain power. Leech (2001) illustrates this relationship between the threshold and the relative voting power at high values of threshold.

**Table 4. Changes in independent and conciliatory power coefficient (PC)**

Country	$\Delta PC$ w/SSI	$\Delta PC$ w/BI
Malta	-12.69%	-48.34%
Luxembourg	-12.15%	-48.48%
Cyprus	-12.15%	-48.48%
Estonia	-8.33%	-27.40%
Slovenia	-8.33%	-27.40%
Latvia	-8.33%	-27.40%
Lithuania	-6.67%	-27.65%
Ireland	-6.67%	-27.65%
Finland	-6.67%	-27.65%
Denmark	-6.67%	-27.65%
The Slovak Rep.	-6.67%	-27.65%
Austria	-7.01%	-12.26%
Bulgaria	-7.01%	-12.26%
Sweden	-7.01%	-12.26%
Portugal	-4.45%	5.91%
Hungary	-4.45%	5.91%
Belgium	-4.45%	5.91%
The Czech Rep.	-4.45%	5.91%
Greece	-4.45%	5.91%
The Netherlands	-4.81%	5.46%
Romania	-1.96%	32.76%
Poland	4.31%	30.66%
Spain	4.31%	30.66%
Italy	9.15%	49.04%
France	9.15%	49.04%
The UK	9.15%	49.04%
Germany	9.15%	49.04%

Denmark, Ireland, Austria, Sweden, and Finland, and small candidates, like Malta, Cyprus, Slovenia, Bulgaria, Latvia, and Lithuania lost both their independent and conciliatory power. In particular, they have lost more independent power, which induces more cooperation by forming coalitions among themselves. The effect on bigger countries is almost the opposite. France, UK, Germany, Italy, Spain, and the applicant Poland gained power on both accounts. In particular, their independent power increased significantly. Accordingly, these countries are likely to act alone in the future.

Consequently, France, Germany and the other big countries (UK, Italy, Spain, and Poland) are likely to act independently in the future, whereas small countries are likely to join powers in blocs with other countries in similar situations. Cooperation is likely among the CEEC, with the exception of Poland, upon membership since they share common background and concerns. Other small incumbent

EU members and applicants with similar interests will form their own counter-blocs: Mediterranean countries (Portugal, Greece, Malta and Cyprus), Scandinavian countries (Denmark, Sweden and Finland), and Benelux countries (Belgium, the Netherlands, and Luxembourg). Ireland is likely to act along with the Mediterranean bloc because of similar income levels, and Austria with its former EFTA partners in the Scandinavian bloc.

Partial homogeneity where there are independent blocs which are homogenous within, is needed in this situation to better explain the power of each country. Under partial homogeneity, the distribution of power among the blocs assumes independence as in the Banzhaf index, and the distribution of the bloc's power among its participants assumes homogeneity as in the Shapley–Shubik index. Accordingly, the power of a country  $i$  in a bloc  $B_i$  with  $b_i$  members is the bloc's power in a group of  $n_s$  blocs times country  $i$ 's power within the bloc:

$$PPH_{i \in B_i} = BI_{B_i}^{n_s} SSI_i^{B_i} = \left( \sum_{S \in M_{B_i}} \left( \frac{1}{2} \right)^{n_s-1} \right) \times \left( \sum_{S' \in M_i} \frac{(b_i - s)!(s-1)!}{b_i!} \right) \quad (4)$$

where  $S$  is any coalition of blocs.  $M_{B_i}$  are the winning coalitions, where  $B_i$  is crucial.  $S'$  is any coalition within the bloc.  $M_i$  are the minimum winning coalitions within that bloc, where country  $i$  is crucial.

Table 5 gives the power of each country to affect the EU decisions once these blocs are formed, measured according to partial homogeneity.<sup>13</sup> The countries are ordered from the smallest to largest in terms of population weight. Small incumbent members, Mediterranean members, and all CEEC with the exception of Poland lost power, whereas big incumbent members, Scandinavian members, and Poland, gained power after Nice. Considering that the relatively poor countries, like CEEC and the Mediterranean bloc, might have the hardest time in adjusting to the deepening integration, and thus will likely be against it, and that the rich Scandinavian countries, and big countries like France and Germany, which are traditionally supporters of further deepening, this realignment creates fewer problems in any further integration

<sup>13</sup> The power indices given in the table assume simple majority voting rule in the distribution of power within a bloc, since countries in the blocs act conciliatorily. When compared to SSI or BI, although the power of a country according to partial homogeneity is affected by the particular coalition the country is in, one observes some patterns: partial homogeneity implies larger power for small countries than SSI and BI implies. Furthermore, the power of large countries according to partial homogeneity lies in between SSI and BI, larger than BI, smaller than SSI.



**Table 5. Power according to partial homogeneity (PPH)**

Country	Pre-Nice PPH	Post-Nice PPH	Change
Malta	0.018	0.008	-55.2%
Luxembourg	0.044	0.040	-9.3%
Cyprus	0.018	0.008	-55.2%
Estonia	0.017	0.010	-42.5%
Slovenia	0.017	0.010	-42.5%
Latvia	0.017	0.010	-42.5%
Lithuania	0.017	0.017	0.1%
Ireland	0.018	0.028	56.8%
Finland	0.012	0.013	9.3%
Denmark	0.012	0.013	9.3%
The Slovak Rep.	0.017	0.017	0.1%
Austria	0.024	0.026	9.3%
Bulgaria	0.032	0.023	-28.1%
Sweden	0.024	0.026	9.3%
Portugal	0.040	0.038	-5.4%
Hungary	0.032	0.032	-0.4%
Belgium	0.044	0.040	-9.3%
The Czech Rep.	0.032	0.032	-0.4%
Greece	0.040	0.038	-5.4%
The Netherlands	0.044	0.040	-9.3%
Romania	0.064	0.046	-28.3%
Poland	0.064	0.079	23.2%
Spain	0.064	0.079	23.2%
Italy	0.072	0.081	12.7%
France	0.072	0.081	12.7%
The UK	0.072	0.081	12.7%
Germany	0.072	0.081	12.7%

efforts. The only drawback is the increased power of the UK and Sweden, which have been reluctant to embrace deepening efforts in the past.

## V. Fairness and Federalism in the EU

The question of fairness is explored in detail by Laruelle and Widgren (1998). Their conclusion is that fairness depends on the definition of the EU: if the EU is considered to be a unitary state, every EU elector should have one vote. If the EU is just an association of states, then every state should have one vote. Considering that voting power of countries reflects these, they find that the voting weights and the implied voting power in the EU at the time were not fair in both cases.

A federal EU lies between these two cases. In a federal system, decision-making occurs in two stages: voters from each state elect their representatives, and representatives from each state vote in the central government. In the EU context, the first stage is the ordinary political process in which voters in each

member country elect their government. Then, the elected governments' ministers vote in the Council of Ministers. Due to this two-stage decision-making process, electors in smaller states are more powerful in the decisions taken than those in larger states. Penrose (1946) formulated that each state in a federal union should have power proportional to square root of that state's population. Completing Laruelle and Widgren's (1998) work with Penrose's formulation, one can write the absolute voting power of a country  $i$  as follows:

Absolute voting power $_i \propto \text{Population}_i^x$

where  $x$

$$= \begin{cases} 0 & \text{if EU is an association of } n \text{ countries} \\ 1/2 & \text{if EU is federal country of } n \text{ states} \\ 1 & \text{if EU is a unitary country} \end{cases} \quad (5)$$

The above formulation implies the following normalized power for country  $i$ :

Voting power $_i$

$$= \begin{cases} \frac{1}{n} & \text{if EU is an association of } n \text{ countries} \\ \frac{\sqrt{\text{Population}_i}}{\sum \sqrt{\text{Population}_i}} & \text{if EU is federal country of } n \text{ states} \\ \text{Population weight}_i & \text{if EU is a unitary country} \end{cases} \quad (6)$$

Consequently, by computing the power  $x$  that best fits the voting power implied by the new voting weights, we measure the effect of the Nice realignment on the perceived degree of federalism in the EU by its leaders who decided on the new voting weights.

Figure 2 gives the plot of voting power measured by Banzhaf Index<sup>14</sup> against the population weight before and after the Nice realignment, and how it would be under different definitions of the EU. As can be seen from the figure, the Nice realignment moved the EU further away from the case of association, where  $x = 0$ , closer to the case of federal union, where  $x = 1/2$ . In particular, the degree of federalism changes from 0.35 to 0.45 due to the changes in voting weights after Nice. In the previous stages of

<sup>14</sup> The model behind Laruelle and Widgren (1998) is only applicable for Banzhaf index.

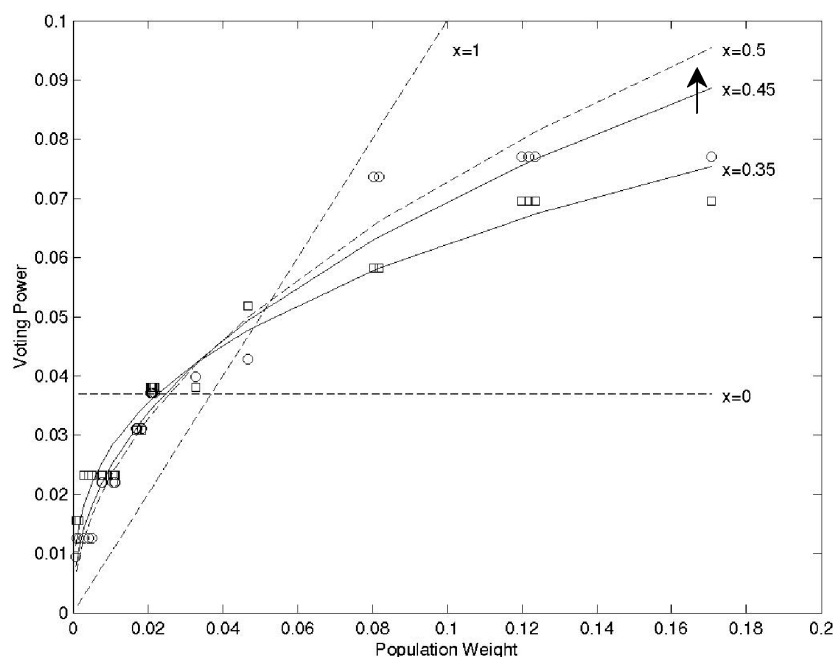


Fig. 2. Degree of federalism after Nice

EU integration, this degree varied around 0.37.<sup>15</sup> Apparently, the EU leaders' vision of the EU is a much more federalist union, since they realigned the voting weights accordingly.

## VI. Conclusions

Baldwin *et al.* (2001) analyse the effects of the Nice Treaty on the EU's Commission and the Council of Ministers and the European Parliament. They conclude that the increased threshold by the Nice Treaty lowers the Council of Minister's ability to make decisions, and indirectly the power of the Commission and the European Parliament suffer too. They conjecture that further integration in the EU is only possible if channelled by enhanced cooperation arrangements. This paper analyses the effects of the changes in voting weights in the Council coupled with the increase in threshold on the future of the integration in Europe.

A simple comparison of voting weights shows that small countries in the EU are still favoured after the Nice realignment of votes, although the bias towards them is now significantly lower. Particularly, predominantly small applicant countries experienced a much larger decrease in their voting weights than

the small incumbent members. Voting power analysis using Shapley–Shubik Index, and the Banzhaf Index reinforced this result by finding a voting power distribution that is now much more aligned with population weights. This decreased the power of small countries like the applicant Eastern Europeans despite an increase in the number of votes required for majority. This change and the increased use of majority voting imply a much smaller loss of power to future new members, as well as decreased cost of enlargement. Overall, the fears of enlargement are lessened, which makes the widening of the European integration more feasible.

Independent versus conciliatory power analysis implies a relatively bigger loss of independent power for small countries, and bigger gains for large countries. These make small countries more willing to give concessions, and enable big countries such as France and Germany to pursue their dream of deeper integration. The power of *a priori* blocs measured under partial homogeneity has increased for big countries and rich Scandinavian countries, which are likely to benefit most from deeper integration. Coalition power of East Europeans, and the Mediterranean countries decreased; these are the countries that will have the hardest time adapting. All these changes make deepening the integration easier.

<sup>15</sup> In EU6,  $x=0.363$ ; in EU9,  $x=0.357$ ; in EU10,  $x=0.392$ ; in EU12,  $x=0.374$ ; in EU15,  $x=0.387$ .

Lastly, an analysis of fairness reveals a more federal EU in the future. Considering all of these results, it looks like the Nice Summit was successful in ensuring future efforts in all aspects of integration in Europe.

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