Strategic vs. Non-strategic Power in the EU Council: The Consultation Procedure*

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January 25, 2009

Abstract

This paper evaluates the distribution of power within the European Union's (EU) Council of Ministers using two approaches: first, using traditional power indices and, second, carrying out equilibrium analysis of the EU's consultation procedure in the spatial voting framework. The differences between the respective ascription of power to Council members are analyzed in detail in order to, first, clarify *why* both approaches can generally lead to different power indications, and hence conclusions regarding, e.g., the effect of adopting the Lisbon Treaty's voting provisions. Second, the key determinants of the *magnitude* of differences (adopting the *a priori*-perspective of constitutional design) are identified. In particular, traditional indices are an efficient means to approximate also the strategic balance of power in a procedural weighted voting setting, when the highlighted differences affect players approximately proportional to weights. This turns out to be the case for the Council assuming that the Commission does not act strategically and there is no status quo bias. Otherwise, the ascriptions of traditional indices provide a distorted view of how voting weight translate into voting power under a given decision procedure.

Keywords: European integration, Council of Ministers, power

JEL codes: C70, D71, H77

*This research has generously been supported by the Yrjö Jahnsson Foundation.

1 Introduction

The question of national influence on legislation adopted by the European Union (EU) is of interest and importance to politicians, the general public, and academics alike. It has inspired both a great number of applied studies and vigorous methodological debate. The applications, typically applying measures of voting power of cooperative games, have been highly concentrated on the intra-institutional distribution of power in the the Council of Ministers (CM) which is the main decision-making body of the EU.[1] These studies started to mushroom in the early 1990s and are mostly inspired by EU enlargements and institutional reform where, indeed, the CM was the key institution.

In this paper, we present a unified power analysis, which evaluates the distribution of power at inter-institutional and intra-institutional level simultaneously by taking the role of the European Commission (EC), the main initiator of EU legislation, into account. This makes the considered decision-making game procedural. Therefore, our measure of power that is used for the assessment is based on an actor's impact on the equilibrium outcome in the case of, other things being given, his/her marginal preference change.

Indeed, the main criticism towards power index approach of cooperative games has become from the scholars who analyse EU decision-making using spatial voting games and hence taking preferences, inter-institutional set-up and strategic aspects into account (for discussion, see e. g. Garrett and Tsebelis 1999, Garrett and Tsebelis 2001, Holler and Widgrén 1999 and Felsenthal and Machover 2001b). In spatial voting games literature, rigorous analysis of quantitative inter-institutional power relations and especially distribution of power in the CM is, however, still in its infancy.

This paper evaluates the distribution of power within the CM in spatial context. We do, however, approach the issue in a very different manner compared to existing studies. Although our main emphasis is in the power distribution in the CM, we don't make the assessment in isolation of the European Commission (EC) like the standard voting power literature does (see e.g. Widgren 1994). Specifically, we use a procedural inter-institutional non-cooperative framework of EU decision-making in consultation procedure. We, thus, assume that also the CM members act strategically to evaluate CM as an integrated part of EU decision-making. This extends the traditional studies that concentrate only on intra-institutional distribution of power in CM.

We have chosen consultation procedure for our investigation for two reasons. First, the procedure is very simple, which helps to capture the impact of an inter-institutional interaction and, second, the procedure also nicely illustrates the relative influence of, on the one hand, a supranational actor and agenda-setter, i.e. the EC and, on the other hand, an inter-governmental actor and decision-maker, i.e. the CM.

In a recent paper, Passarelli and Barr (2007) consider a spatial model of CM with an agenda-setter ("Commission"). The agenda-setting model in their paper is reminiscent to EU's consultation procedure but the model is not, however, strategic since the agenda-

[1] For examples see e. g. Widgren (1994), Laruelle and Widgrén (1998), Felsenthal and Machover (2001a), Felsenthal and Machover (2004), Leech (2002), Baldwin and Widgren (2004) **?**) and references therein.

setter has four types and acts then using a simple type dependent probabilistic rule. They then derive the CM preferences from member states' attitudes towards integration using Eurobarometer surveys and modify member states acceptance probabilities in the multilinear extension (see Owen 1972) using actors' uni-dimensional spatial preferences or ideal policy positions derived from Eurobarometer by principal component analysis. They then compute the power values in CM by randomising the issue of vote and assuming bell-shaped acceptance probabilities that have the maximum value at each country's ideal point.[2]

This paper takes an important step further from earlier power analyses on EU decision-making. Specifically, we model the consultation procedure, and use the *strategic measure of power* (SMP) as our method of assessment. The SMP was introduced in Napel and Widgrén (2004) and applied in inter-institutional analysis of EU codecision in Napel and Widgrén (2006). By taking a wider than usual perspective on CM decision-making this paper sheds new light on the intra-CM analysis in inter-institutional strategic environment. The framework generalizes the measurement ideas underlying e. g. the Penrose-Banzhaf or Shapley-Shubik indices to non-cooperative models and preference-based strategic interaction.[3] Thus, the major limitations of traditional indices are overcome (see e. g. Garrett and Tsebelis 1999 for details). Moreover, as our main interest lies in the intra-CM analysis we assume true weighted voting in the CM, which has not been carried earlier in EU procedures using sequential spatial voting games approach. An important and highly interesting question is how well – or how poorly – the classical power indices like the Shapley-Shubik index correspond with our measurement. To make the comparison as transparent as possible we also apply *conditional strategic pivot probability* (CSPP), that enables us to make very detailed comparison between the equilibrium and coalition based power. The idea behind CSPP is to restrict the strategic power measurement to intra-CM level and to remove the status quo bias that is an important element in SMP.

The remainder of the paper is organized as follows: Section 2 first introduces intra-CM decision-making and its traditional assessment in isolation of the other EU bodies. As it is our main target of assessment some basic facts are needed. Section 3 describes then the our model of inter-institutional relations between CM and EC and. The section introduces the equilibrium outcomes of our model of the consultation procedure that is then used for intra-CM investigation in section 4. A detailed comparison of the strategic procedural and traditional coalitional form cooperative analysis is presented in section 5 and, finally, discussion about the findings is placed in section 6.

2 Intra-CM Distribution of Power in Isolation

[2]This paper falls near to a category where cooperative models are tried to modify using different probabilistic models that mimic preferences (see e. g. Kirman and Widgrén 1995, Widgren 1995, Kauppi and Widgrén 2004 and Straffin 1977).

[3]For a recent study on non-cooperative foundations of power indices, see Laruelle and Valenciano (2008) and references therein.

2.1 Intra-CM Decision-Making

The weighted voting in the CM remained practically unchanged from the Treaty of Rome in 1957 until the Treaty of Nice that was signed in 2001. The original rules were based on weighted qualified majority voting (QMV).[4] The Nice agreement is a re-weighting scheme that reallocated voting rights from the smallest to the biggest nations. The Nice rules came into force on 1 November 2004.[5]

The Nice rules maintain the QMV framework, but add two extra criteria, the so-called *safety-nets*, concerning the number of yes-votes and the share of EU population they represent. Specifically, the vote threshold was set in Nice to 73.9 percent. Moreover, acceptance of a simple majority of Member States (14 members) and countries that represent 62 percent of the EU population. Table 1 shows member states' voting weights. The second and third requirements have, however, only a negligible effect on the possible winning coalitions (see e. g. Baldwin, Berglöf, Giavazzi, and Widgrén 2001 or Felsenthal and Machover 2001a) and affect the quantitative results only at the 5$^{\text{th}}$ or 6$^{\text{th}}$ digit.

The main revision of the Lisbon Treaty, that was agreed by member states' heads of states in December 2007, to voting rules was the switch from weighted voting into a *dual majority system* with additional requirements.[6] In fact, the Lisbon Treaty introduces a quadruple majority: A winning coalition must represent at least 55 percent of EU members that represent 65 percent of the EU population. Moreover, during the final negotiations two last-minute Summit compromises [7] were inserted. They are the requirement of at least 15 members vote 'yea' to pass proposals and at least four countries are required to block decisions. They both have an impact in EU-27 as 15 members is 55.6 percent of the membership but in computations the effect turned out to be, indeed, negligible affecting only the sixth or seventh digit of the power index values. The *Lisbon* voting rules should come into force in November 2014. Referendum in Ireland rejected the Lisbon Treaty in June 2008 and its future remains still unclear as not all member states have ratified it.

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[4]When the UK, Denmark and Ireland entered in 1973 the original votes of the founding member states were multiplied by 2.5 with an exception of Luxembourg whose number of votes was multiplied by 2. This was to make the difference between new small member states Denmark and Ireland that are clearly bigger than Luxembourg but smaller than Belgium or the Netherlands who had one and two votes in the original system respectively. The new system gave 10 votes for the three biggest member states, five votes for the medium sized the Netherlands and Belgium and two votes for Luxembourg. Among the new entrants the UK got 10 votes, Denmark and Ireland three votes each.

[5]The first months after the eastern enlargement were governed under an intrapolation of the old rules. In EU jargon, these rules were called Temporary Accession Treaty voting rules. Their contents are qualified majority voting with weighted votes and the old majority threshold of 71 percent to win (88 of 122 votes). The numbers of votes for the incumbent 15 are unchanged; those for the 10 new Member States are a simple interpolation of EU15 votes as specified in the Accession Treaties.

[6]Originally this was already introduced in the Constitutional Treaty that was politically agreed in June 2004 but rejected by referenda in France and the Netherlands in May 2005.

[7]The keys in EU jargon.

2.2 Traditional Analysis of Intra CM power

An often used measure for actors' voting power is the *Shapley-Shubik index* (SSI) introduced by Shapley and Shubik (1954). It can be seen as a special case of a broader concept the *Shapley value* (Shapley 1953) in cooperative coalitional form games. SSI is restricted to so-called simple games that are usually used in modelling voting games. In simple voting games, winning and losing coalitions are differentiated by their worth (usually one and zero, respectively). Thus, all winning coalitions have the same worth and all losing coalitions have the same worth.

More formally, let N be a set of n member states in the Council, $\mathcal{P}(N)$ the class of subsets (coalitions) of N and let $S \in \mathcal{P}(N)$ denote any coalition of member states having s members. Let w_i denote the voting weight of member state i, $i \in N$ and Q, $Q \in (\frac{1}{2}, 1]$ a majority quota. A voting game in the Council can be characterized by a set function $v : \mathcal{P}(N) \to 0, 1$, $v(S)$ obtaining value 1 if coalition S forms a majority, i.e. $\sum_{i \in S} w_i > Q$, and zero otherwise. In this simple setting, $\phi : N \to [0, 1]$ of a member state $i \in N$ can be written

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

where $i = 1, ..., n$. The first term in the sum gives the probability of country i being in a pivotal position in coalition S and the latter term counts those pivotal positions where country i is able to swing a winning coalition into losing, i.e. S is winning and the removal of i from it makes it losing.

There are several ways to approach and interpret ϕ. The most traditional way is axiomatic (see e.g. Dubey and Shapley 1979 and Laruelle and Valenciano 2002). The main criticism towards this approach refers to its abstract nature. Axioms may give plausible conditions for the outcome prediction but they do not describe the decision-making game. Second way to approach ϕ is due to Owen (1972) and Straffin (1977). It is probabilistic and based on the idea that the voters face a random proposal and that the actors pick their acceptance rates p_i from a common uniform distribution $U(0, 1)$. Denote the common rate by $p_i = t \; \forall i$ which is then assumed to have uniform distribution $t \sim U(0, 1)$. Note, that this assumption does not indicate that all voters have the same acceptance rate in a single vote, only a common distribution of the acceptance rates.

The main reason why we haven chosen ϕ as the representative of the traditional analysis is, however, its spatial interpretation and, more generally, the bargaining foundations that ϕ has in the literature (see e. g. Hart and Mas-Colell 1996 and Laruelle and Valenciano 2008). Since we compare the traditional approach to a strategic approach that is based, here, on spatial preferences ϕ is, therefore, a natural choice. Consider the following bargaining protocol. Let N be a player set of n players and $p = (p_1, ...p_n) \in \mathbf{R}^n_+$ be a vector of players' $i \in N$ probabilities of being a proposer to make a feasible proposal $x \in D_d$ where D_d denotes the set D of feasible proposals (allocations) having d as the breakdown allocation. Assume that

1. the game ends with proposed pay-off x if all $i \in N$ accept x

Table 1: The distribution of power in the EU27 under the Nice and Constitutional Treaty rules evaluated by Shapley-Shubik index (2006 populations)

Member state	Population in 100,000s	Nice weight	ϕ (Nice)	ϕ (LT)
Belgium	10396.4	12	0.03398	0.02317
Bulgaria	7801.3	10	0.02811	0.01877
Czech Republic	10211.5	12	0.03398	0.02277
Denmark	5397.6	7	0.01952	0.01517
Germany	82531.7	29	0.08736	0.15854
Estonia	1350.6	4	0.01099	0.00896
Greece	11041.1	12	0.03398	0.02416
Spain	42345.3	27	0.08017	0.07609
France	61684.7	29	0.08717	0.11321
Ireland	4027.5	7	0.01952	0.01330
Italy	57888.2	29	0.08694	0.10490
Cyprus	730.4	4	0.01097	0.00809
Latvia	2319.2	4	0.01099	0.01039
Lithuania	3445.9	7	0.01952	0.01208
Luxembourg	451.6	4	0.01097	0.00762
Hungary	10116.7	12	0.03398	0.02250
Malta	399.9	3	0.00816	0.00754
Netherlands	16258	13	0.03674	0.03250
Austria	8114	10	0.02811	0.01964
Poland	38190.6	27	0.07989	0.06689
Portugal	10474.7	12	0.03398	0.02326
Romania	21711.3	14	0.03985	0.04146
Slovenia	1996.4	4	0.01099	0.00995
Slovakia	5380.1	7	0.01952	0.01511
Finland	5219.7	7	0.01952	0.01491
Sweden	8975.7	10	0.02811	0.02087
United Kingdom	59651.5	29	0.08699	0.10815

2. if not the process recommences with probability r, $0 < r < 1$ and breaks down to allocation d with probability $1 - r$.

Laruelle and Valenciano (2008) show that if $B = (D, d)$ an n-person bargaining problem, D being closed, convex and comprehensive and containing a point $x > d$ such that $D - d$ is bounded and non-level. Then under the above bargaining protocol there exists a stationary subgame perfect equilibrium (SSPE). Moreover, if $r \to 1$ any SSPE pay-off vector converges to w_i-weighted *Nash bargaining solution*, weights w_i given by p.

Consider next a random ordering of players in N and a winning coalition $S \in \mathcal{W}$, $\mathcal{W}$ being the class of winning coalitions under a given voting rule. Let players join a coalition in this order until S is formed. Then the last player entering S is the proposer. Under this *Shapley-Shubik protocol* $P(i$ is the proposer$) = \phi_i(\mathcal{W})$. Then if we repeat the bargaining protocol given by (1.) and (2.) above in the bargaining problem $B = (D, d)$ there exists a SSPE. Moreover, if $r \to 1$ any SSPE pay-off vector converges to w_i-weighted *Nash bargaining solution*, weights w_i given by ϕ. Moreover, if the bargaining problem is such that $d = \mathbf{0}$ and $\sum_i^n x_i = \mathbf{1}$ also the SSPE payoffs are given by ϕ (see Laruelle and Valenciano 2008).

The random ordering or the Shapley-Shubik protocol approach also leads to SSI's spatial illustration which is already due to Shapley (1953). Suppose that we have a uni-dimensional (continuous) space on which we order the players. Call that a policy space that might describe e. g. political 'right vs. left' or 'integrationist vs. anti-integrationist' dimension. Furthermore, assume that in any randomly chosen issue the players choose of position that reflects their rate of support to the acceptance of either 'yea' or 'nay' position. In any issue, players' choices induce an ordering. Let us then start counting from either extreme until we reach a required majority (winning coalition). The last player that enters a winning coalition that turns in to losing if he/she does not enter is the proposer in the terminology of Laruelle and Valenciano (2008). In coalitional form games that player is called *pivotal*. There are two important aspects in this illustration that also makes an explicit link to our analysis below. Suppose that 'nay' represents the current state of affairs, i.e. the status quo, and 'yea' the most extreme possible shift of it.[8]

As a benchmark for our analysis Tab. 1 gives the intra-CM distribution of power evaluated by ϕ under the Nice and the Lisbon Treaty (LT) voting rules and member states' populations and the Nice voting weights. the comparison of the LT and Nice rules demonstrates that the former rule makes the biggest four countries and Romania more powerful. Especially, Germany's ϕ-value nearly doubles in the Constitution compared to the Treaty of Nice. For the other countries the Nice rules are power-wise better.

3 Consultation Procedure

The *consultation procedure* was introduced already in the Treaty of Rome in 1957 and it was the only way to take decisions in the EEC/EC until the Single European Act (SEA)

[8]Note that we can also assume w.l.g. the opposite, i.e. that 'yea' is the current state of affairs.

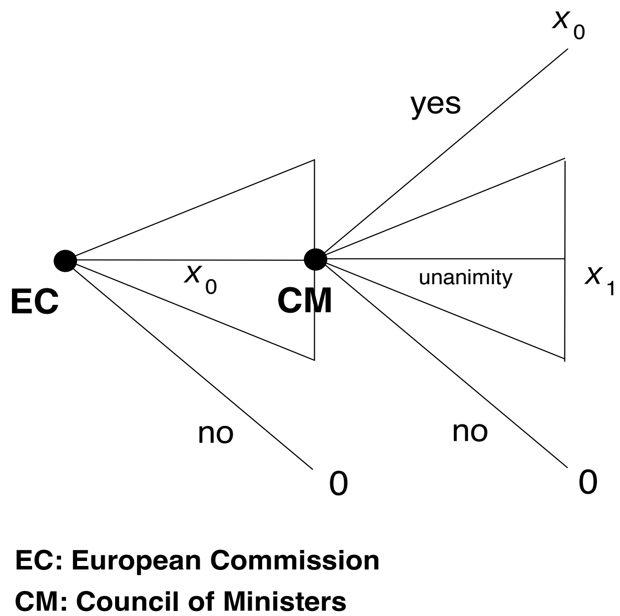

Figure 1: The sequence of moves in consultation procedure

that came into force in 1987.[9] The procedure has two CM voting rules: qualified majority and unanimity depending on the issue at stake. In this paper, we concentrate on the former. The procedure is an interaction between CM and EC while EP has only the right the express its opinion on the proposal.

Fig. 1 describes the sequence of moves in the consultation procedure. In the procedure, EC makes the first move by submitting a legislative proposal to CM which, in turn, accepts the proposal by qualified majority or unanimity consent depending on the version of the proposal that is in use. Here we concentrate on majority version. CM can also amend the original EC proposal by unanimous vote. This gives CM *conditional agenda-setting power*[10]. Moreover, CM can request the EC to undertake any studies the CM considers desirable for the attainment of the common objectives, and to submit to it any appropriate proposals (Art. 208). For this reason, we assume that EC does not exert any gate-keeping power although in some cases it would prefer the legislative status quo to the alternative outcome.

In the consultation procedure, we can qualitatively distinguish between four different predicted equilibrium outcomes depending on actors' ideal policy positions and the legislative status quo. These are shown in Fig. 2.

[9]The SEA introduced the so-called cooperation procedure which gave European parliament (EP) a well-defined role and increased its power. Later, the Maastricht Treaty introduced co-decision procedure which further strengthened the role of EP (see, however, Napel and Widgrén 2006).

[10]For the initial use of the term in the context of the European Parliament see Tsebelis 1994.

Case I

In the first case (case I in Fig. 2), the legislative status quo prevails. This materialises in two ways. First, if the status quo falls between the left and right pivot there is a blocking minority on both sides of the status quo regardless of the EC position. Then neither side can form a qualified majority to shift the current state of affairs because there is enough votes on both sides of q to prevent any attempt to shift the status quo. Any positive action would require that q is either to the left of the left pivot or to the right of the right pivot. Second, if the position of EC and a qualified majority but not unanimous consent in CM are on the opposite sides of the status quo EC is not willing to propose anything that pleases the qualified majority. Knowing that there is no unanimous consent on the other side of the status quo EC can propose anything that is (weakly) closer to it than the status quo and that will be rejected and, moreover, CM is not able to amend the proposal to be more favourable to all CM members.

Case II

In the second case (case II in Fig. 2), EC is able to pass its own ideal policy. This is possible when EC's ideal policy lies closer to either the right or left pivot in CM than the status quo and EC's ideal policy is not to the right (left) of rightmost (leftmost) CM member. If the latter condition does not hold unanimous CM might be able to amend the proposal. Moreover, given the conditions above EC is able to pass its ideal point only if q is not located between the pivotal CM members as then the legislative status quo would prevail as in case I.

Case III

In the third case (cases IIIa and IIIb in Fig. 2), CM pivot exerts power. In case IIIa, this requires that the left pivot is has its ideal policy closer to the status quo than EC and that EC's and CM pivot's ideal policy positions are on the same side of q. If these two conditions hold EC must take CM pivot's policy position into account in its proposal. The optimal proposal that will be accepted makes the left pivot indifferent between q and the proposal. That occurs when EC proposes $2\mu_L - q = \tilde{\mu}_L < \mu_R$. If the last inequality doesn't hold the proposal would be μ_R. Case IIIb is just a mirror image of the case IIIa as Fig. 2) demonstrates.

Case IV

In the fourth case (cases IVa and IVb in Fig. 2), either the leftmost (rightmost) position in CM passes. All together, there are eight ways to get the ideal policy of the extreme CM as an outcome. Consider the left-most CM member. To get $\mu_{(1)}$ as the outcome requires, first, that the ideal policy position of EC is not between the extreme positions in CM. Otherwise CM is not capable to find a unanimous consent for amendments that are superior to EC's

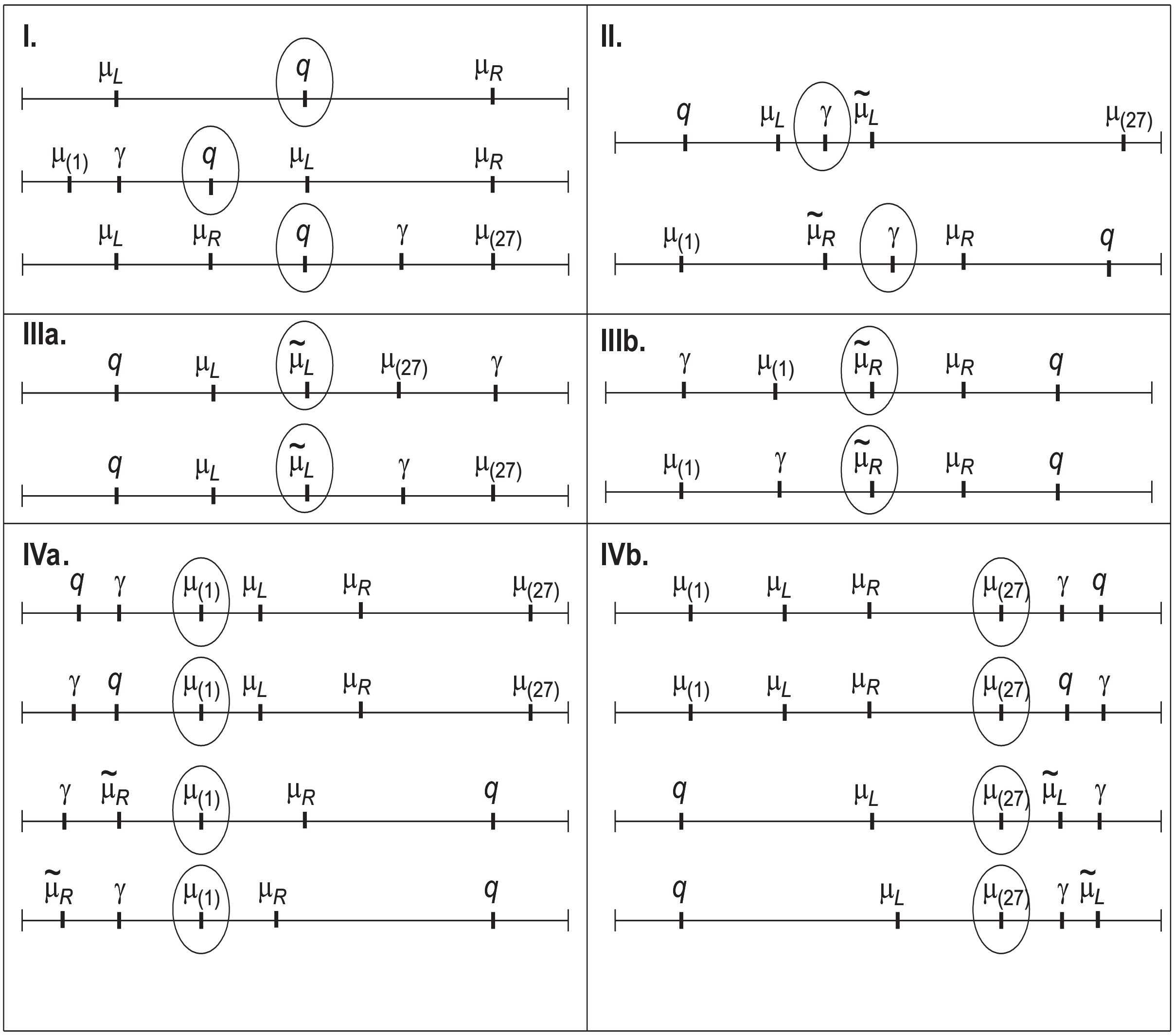

Figure 2: Equilibrium outcomes in consultation procedure

rational proposal from the viewpoint of all CM members. Moreover, all CM members should agree on the direction to which they want to shift the legislative status quo. Hence the whole CM is on the same side of q. Then, assuming no gate-keeping, the best that EC can do is to propose the ideal policy of the CM member that is closest, which is either the left-most or right-most CM member. Note that the 'no gate-keeping' assumption is crucial when EC's ideal policy is on the other side from q than all CM members since gate-keeping, in that case, would imply that the status quo prevails.

More formally, let μ_L and μ_R denote the left and right pivots defined as above and μ_1 and μ_{27} the leftmost and rightmost positions in CM respectively and let γ denote EC's ideal point and q the status quo. Assume that all ideal points are on unit interval $[0, 1]$. The equilibrium outcome χ of the consultation procedure can be expressed more formally as follows.

$$\chi = \begin{cases} q & \text{if} \quad \{q \in [\mu_L, \mu_R]\} \vee \{\{\gamma < q < \mu_L\} \wedge \{\mu_1 < q\}\} \vee \\ & \qquad \{\{\gamma > q > \mu_R\} \wedge \{\mu_{27} > q\}\} \\ \gamma & \text{if} \quad \{\{\mu_{(1)} \leq \gamma \leq \mu_{(27)}\} \wedge \{\{q < \gamma < \tilde{\mu}_L\}\} \vee \{q > \gamma > \tilde{\mu}_R\}\} \\ \tilde{\mu}_L & \text{if} \quad \{q < \tilde{\mu}_L < \gamma\} \wedge \{\tilde{\mu}_L < \mu_{27}\} \\ \tilde{\mu}_R & \text{if} \quad \{\gamma < \tilde{\mu}_R < q\} \wedge \{\mu_1 < \tilde{\mu}_R\} \\ \mu_{(1)} & \text{if} \quad \{\{\gamma \leq \mu_{(1)}\} \wedge \{q < \mu_{(1)}\}\} \vee \{\gamma < \mu_1 \wedge \tilde{\mu}_R < \mu_1\} \\ \mu_{(27)} & \text{if} \quad \{\{\gamma \geq \mu_{(27)}\} \wedge \{q > \mu_{(27)}\}\} \vee \{\gamma > \mu_{27} \wedge \tilde{\mu}_L > \mu_{27}\} \end{cases} \tag{2}$$

Note that the equilibrium outcome presumes that EC has no gate-keeping power. The cases $q \leq \gamma \leq \mu_{(1)}$ and $q \geq \gamma \geq \mu_{(27)}$ would lead to an amendment by CM. Under these circumstances rational EC would not propose since the status quo gives it a higher utility. Referring to Art.208 of the Treaty Establishing the European Community we, however, assume that in such case CM requests EC to submit a proposal. The proposal is either the ideal point of the leftmost or rightmost CM member. When the status quo prevails EC can propose any point on the policy space X and that will be rejected by CM. Assuming ε-costs of submitting proposals EC keeps its gates closed and there is no required majority in CM to request EC to submit a proposal.

4 Intra-CM Power in Consultation Procedure

When there are more than one decision making institutions involved or when one is investigating the interaction between several institutions the classical power index approach faces problems since it assumes that players are voting or moving simultaneously, which is rarely the case in decision making procedures. As mentioned above, the non-cooperative approach serves as an alternative for investigating decision-making institutions.

4.1 The Strategic Measure of Power

In the following, we will consider a convex Euclidean policy space $\mathbf{X} \subseteq \mathbb{R}$, $\mathbf{X} = [0, 1]$. The legislative status quo is $q \in [0, 1]$ The considered political actors have single-peaked preferences characterized by an individual *bliss point* or *ideal point* $\lambda \in \mathbf{X}$: The smaller the distance $d_i = \|\lambda_i - x\|$, the higher the agent values a policy $x \in \mathbf{X}$. We also suppose that not only do 27 individual members in EC and 27 national government representatives in CM have such preferences but there are representatives of EC and CM who possess aggregated spatial preferences of the same kind. It is then possible to predict the Consultation outcome by specifying, first, how EC's and CM's respective internal decision rules translate preferences of individual members into the institutions' ideal points γ (for EC) and μ (for CM) and, second, how the institutions' (collective) preferences jointly determine an agreement.

The criticism raised against classical power indices above does not mean, however, that the core of the traditional power index approach, namely a player's marginal contribution to the outcome, is useless. For this reason, Napel and Widgrén (2004) propose to extend the above analysis from the simple coalition framework of a priori power measurement and the very basic voting game to a more general framework. First, take a player's marginal contribution as the best available indicator of his potential or ability to make a difference, i. e. his *a posteriori power*. Second, if this is of normative interest or a necessity for lack of precise data, calculate a priori power as expected a posteriori power. Expectation can be formed with respect to several different aspects of a posteriori power such as actions, preferences, or procedure.

In this unified approach, impact is relative to a what-if scenario or what Napel and Widgrén (2004) call the *shadow outcome*. The shadow outcome is the group's decision which would have resulted if the player whose power is under consideration had chosen differently than he a posteriori did, e. g. if he had stayed out of coalition S when he a posteriori belongs to it. Assume spatial preferences. Then each player has an ideal policy position on a unit interval, say. In this paper, we assume that a unit interval represents a policy space, i.e. the set of possible policy outcomes in one issue, and a set of mutually independent unit intervals in several issues.

To illustrate this in more detail, let $\Lambda = (\lambda_1, \ldots, \lambda_n)$ be the collection of n players' ideal policy positions on unit interval. In a policy space $\mathbf{X} = [0, 1]$, the opportunities even for only marginal changes of preference are manifold. A given ideal point λ_i can locally be shifted to $\lambda_i + h$ where h is an arbitrary small shift either to the left or right.

Let x^* be the equilibrium outcome in consultation procedure as described in Eq. (2) above. One can now define

$$D_i(\Lambda) = \frac{\partial x^*(\lambda_i, \lambda_{-i})}{\partial \lambda_i}. \tag{3}$$

as a reasonable measure of player i's ex post power. More specifically, let γ and μ represent the ideal aggregate policy positions of EC and CM respectively. Due to respective internal decision-making rules γ is the ideal policy position of the median Commissioner and μ is the ideal policy position of the pivotal minister (assuming QMV) in CM. Using the ex post power above we can define a corresponding ex ante measure as

$$\xi_i = \int D_i(\gamma, \mu) dP. \tag{4}$$

Using a suitable probability distribution of players' ideal policy positions. Napel and Widgrén (2004) refer to this index to as *Strategic measure of power.*

As demonstrated above, ξ measures actors' power at inter- and intra-institutional level. To make a comparison at intra-CM level we must either develop a cooperative measure that is capable to evaluate inter-institutional relations in procedural setting or compute conditional strategic measure of power, condition being the union of cases IIIa. and IIIb in Fig. 2 above, and then make the comparison between that and ϕ. We chose the latter. Recall that ϕ gives the actors' intra-CM probabilities. Let's denote the *conditional strategic power* (CSP) by $\bar{\xi}$ and *conditional strategic pivot probability* (CSPP) by $\bar{\xi}^p$. Using Eq. (2) we can write

$$\bar{\xi}^p = Pr\{i \text{ is pivotal}|\{q < \tilde{\mu}_L < \gamma\} \wedge \{\tilde{\mu}_L < \mu_{27}\} \vee \{\gamma < \tilde{\mu}_R < q\} \wedge \{\mu_1 < \tilde{\mu}_R\}\} = \frac{\bar{\xi}}{2}. \tag{5}$$

Clearly, ϕ and $\bar{\xi}^p$ give probabilities of occurrence of corresponding events in non-strategic and strategic environment, respectively. As such they form the perfect pair for our comparison non-strategic and strategic power. Note that to achieve comparability we conditionalise status quo bias, EC's power and procedural elements away from ξ. These are exactly the elements that are disregarded by ϕ as there are always gains from trade, EC does not act strategically but rather picks the pivotal players position to be the outcome and, finally, CM's unanimous amendments are ruled out since the procedure is not modelled.[11]

4.2 Applying SMP and CSPP in Consultation Procedure

Let us define a population measure in the same spirit as the voting weight measure above as the population of a country that represented by the minister having ideal point $\mu_{(i)}$ and let us denote it by $p(\mu_{(i)})$. Define also the total EU population by $P_{EU} = \sum_{i=1}^{27} p(\mu_{(i)})$

Under the Nice rules, we can write the right pivot μ_R as follows

$$\mu_R = \min \left\{ r \in \{(14), ..., (27)\} : \sum_{i=1}^{r} w(\mu_{(i)}) \geq 255 \wedge \sum_{i=1}^{r} p(\mu_{(i)}) \geq 0.62 P_{EU} \right\}, \tag{6}$$

[11] In the literature applying classical power indices, there are, however, some attempts to assess the impact of CM's possible amendments. These are carried out in *composite game* framework in which all winning coalitions are assumed to include EC as an unitary actor except one which is the grand coalition of CM. This approach is also used to evaluate the power of EC (see e.g. Kirman and Widgrén 1995 and for composite games Owen 1995). In these studies, EC is not, however, strategic actor but rather a probability distribution.

i.e. the government that is in a position of making a swing when the coalition formation starts from the left-most position and the left pivot μ_L

$$\mu_L = \max\left\{ l \in \{(1), ..., (14)\} : \sum_{i=l}^{27} w(\mu_{(i)}) \geq 90 \wedge \sum_{i=l}^{27} p(\mu_{(i)}) \geq 0.38 P_{EU} \right\}, \qquad (7)$$

i.e. the government that is in a position of making a swing when the coalition formation starts from the right-most position respectively.

Using the rules of the Lisbon Treaty we get the following right pivot μ_R

$$\mu_R = \max\left\{ \min\left\{ r \in \{(15), ..., (27)\} : \sum_{i=1}^{r} p(\mu_{(i)}) \geq 0.65 P_{EU} \right\}, 24 \right\} \qquad (8)$$

and the left pivot μ_L

$$\mu_L = \min\left\{ \max\left\{ l \in \{(1), ..., (14)\} : \sum_{i=l}^{27} p(\mu_{(i)}) \geq 0.35 P_{EU} \right\}, 4 \right\} \qquad (9)$$

Note that when weighted voting in CM is assumed one cannot determine CM's pivotal player by looking only at a fixed order statistic $\mu_{(i)}$. Rather, one needs to aggregate voting weights of the players in the right order. One, thus, finds an endogenous *pivotal position* p which then allows to use $\mu_{(p)}$ as a reasonable proxy for CM's position in consultation procedure.

Figure 3 illustrates this. It shows how pivotal positions are distributed for three sample countries Germany, Belgium and Luxembourg under the Nice and LT voting rules. The first observation is that the distributions are different from rule to another. Under the Nice rules they are almost symmetric Germany's distribution being slightly skewed to the right. The mean is position 21 for Germany and closer to the position 20 for Belgium and Luxembourg. If we take the average number of votes of a country in Nice rules it is 12.8 and multiply it by 20 we get 255.5. Using 21 as multiplier gives 268.3. This confirms the expected fact that, on average, Germany is pivotal in bigger coalitions than smaller countries Belgium and Luxembourg. In either case, the mean corresponds with the true majority threshold. This together with the distributions symmetry suggest that ϕ and ξ are closely related.

The Lisbon Treaty changes the picture completely. As the right hand panel of figure 3 shows the distributions of pivotal positions are skewed to the left. More swings, thus, take place in smaller coalitions. Especially this holds for smaller countries in our sample. The explanation is two-fold. First, for small countries the membership criterion is much more important source of influence than the population criterion. That explains why Belgium and Luxembourg have most of their pivotal positions at 15, which is exactly the membership criterion. Second, for big countries like Germany the population criterion contributes more to power. The criterion is slightly more than 315 million. Germany's

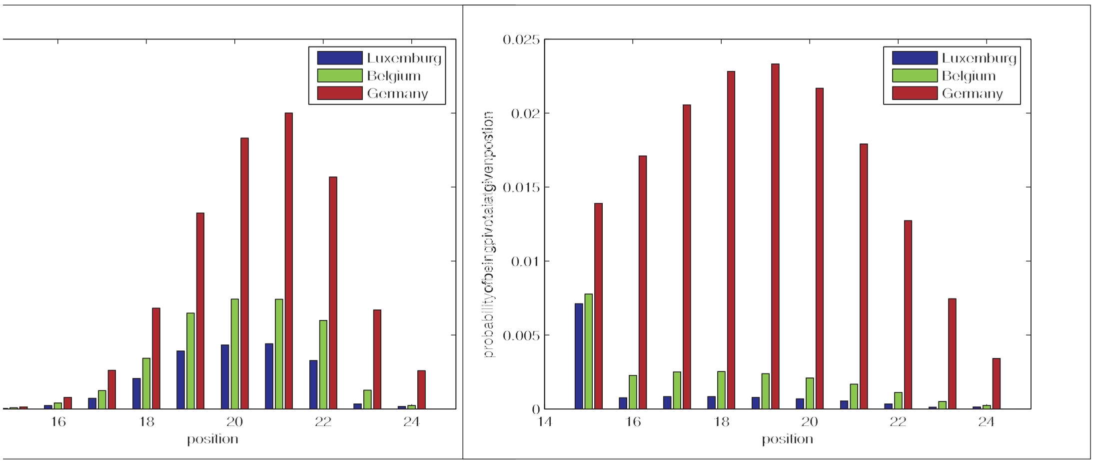

Figure 3: Probability of being pivotal at a given position (Nice rules, the left panel; LT rules the right panel

distribution of her pivotal positions has the mean at 19, which is 343 millions using the average population. With her population of 82 million Germany is easily able to swing coalitions that are bigger than the exact threshold requires into losing.

What is interesting is that there is a clear dual trend in different size countries' pivotal positions. Small countries, on the one hand, exert power in relatively small coalitions (with the help of relatively big countries) and big countries, on the other hand, exert power in relatively big coalitions containing relatively big number of small countries. This phenomenon makes it unclear, how well ϕ and ξ correspond.

Tables 2 and 3 show the results concerning the consultation procedure. Table 2 assumes independent and table 3 dependent EC. In the former case, EC's ideal point is drawn independently and it corresponds with the ideal point of the median voter in EC.In the latter case, EC's ideal policy is equal to the ideal policy of the CM median voter (see discussion on EC's independence and dependence above in Section **??**). The two first columns show the strategic measures of power and the columns three and four the normalised strategic probabilities of being pivotal. Finally, the two last columns give the relative difference between $\bar{xi}^p$ and ϕ.[12]

At inter-institutional level, CM is more powerful than EC in terms of ξ. This result corresponds with the findings using classical power indices of cooperative games, like ϕ. When we assume independent EC the CM is considerably more powerful than the Commission under both voting schemes. Under the Nice rules CM's aggregate power score is nearly four times as big as EC's ξ-value. Under the LT rules the ratio reduces to slightly over 2. When we assume dependent Commission the picture changes drastically. Under the Nice rules the CM's power score is, again, under the Nice rules nearly four times bigger than the the power score of the Commission but under the LT rules the scores are even.

[12]Due to complexity of the equilibrium outcome the ξ values are computed by Monte Carlo simulations. The figures in tables 2 and 3 are based on 2000000000 simulations.

Table 2: Strategic power in the EU27 under the Nice and Lisbon Treaty rules and the intra-CM difference between $\bar{\xi}^p$ and ϕ in consultation procedure (independent EC)

Member state	ξ Nice	ξ Lisbon	$\bar{xi}^p$ Nice	$\bar{xi}^p$ Lisbon	$(\bar{xi}^p$ - $\phi)/$ ϕ, % Nice	$(\bar{xi}^p$ - $\phi)/$ ϕ, % Lisbon
Belgium	0.02024	0.01345	0.03429	0.02327	-0.90652	-0.41524
Bulgaria	0.01680	0.01086	0.02852	0.01886	-1.48020	-0.47647
Czech Republic	0.02024	0.01321	0.03430	0.02286	-0.94410	-0.39425
Denmark	0.01175	0.00875	0.02004	0.01528	-2.64739	-0.67307
Germany	0.05077	0.09269	0.08556	0.15814	2.06993	0.25036
Estonia	0.00671	0.00507	0.01158	0.00902	-5.41519	-0.61925
Greece	0.02023	0.01403	0.03428	0.02426	-0.87119	-0.42191
Spain	0.04679	0.04433	0.07888	0.07583	1.60801	0.34608
France	0.05068	0.06609	0.08540	0.11286	2.03445	0.30118
Ireland	0.01175	0.00764	0.02004	0.01338	-2.65438	-0.62687
Italy	0.05059	0.06125	0.08525	0.10463	1.93986	0.25466
Cyprus	0.00671	0.00456	0.01159	0.00815	-5.60868	-0.68443
Latvia	0.00672	0.00592	0.01159	0.01046	-5.50518	-0.68496
Lithuania	0.01175	0.00692	0.02005	0.01216	-2.70762	-0.70282
Luxembourg	0.00671	0.00428	0.01157	0.00767	-5.46317	-0.65686
Hungary	0.02024	0.01305	0.03429	0.02260	-0.91469	-0.42984
Malta	0.00505	0.00423	0.00879	0.00759	-7.74854	-0.68008
Netherlands	0.02185	0.01893	0.03700	0.03260	-0.69961	-0.30521
Austria	0.01680	0.01137	0.02852	0.01973	-1.47903	-0.47880
Poland	0.04667	0.03900	0.07867	0.06675	1.52653	0.20029
Portugal	0.02023	0.01350	0.03429	0.02336	-0.89537	-0.41456
Romania	0.02366	0.02415	0.04003	0.04148	-0.44908	-0.03735
Slovenia	0.00672	0.00566	0.01160	0.01002	-5.52771	-0.75836
Slovakia	0.01175	0.00871	0.02005	0.01521	-2.70305	-0.63776
Finland	0.01175	0.00859	0.02004	0.01500	-2.68022	-0.60497
Sweden	0.01680	0.01210	0.02851	0.02097	-1.45006	-0.51695
United Kingdom	0.05061	0.06314	0.08528	0.10785	1.96212	0.27793
CM aggregate	0.59058	0.58149	1.00000	1.00000	0.00000	0.00000
Commission	0.16872	0.27391	n.a.	n.a.	n.a.	n.a.

Table 3: Strategic power in the EU27 under the Nice and Lisbon Treaty rules and the intra-CM difference between $\bar{\xi}^N$ and ϕ in consultation procedure (dependent EC)

Member state	ξ Nice	ξ Lisbon	$\bar{xi}^p$ Nice	$\bar{xi}^p$ Lisbon	$(\bar{xi}^p$ - $\phi)/$ ϕ, % Nice	$(\bar{xi}^p$ - $\phi)/$ ϕ, % Lisbon
Belgium	0.02404	0.01016	0.03391	0.02053	0.21340	11.40958
Bulgaria	0.01987	0.00768	0.02802	0.01551	0.29419	17.36067
Czech Republic	0.02403	0.00994	0.03390	0.02007	0.23744	11.83395
Denmark	0.01380	0.00565	0.01946	0.01142	0.29101	24.73831
Germany	0.06205	0.09011	0.08752	0.18205	-0.17952	-14.83110
Estonia	0.00777	0.00219	0.01096	0.00441	0.29302	50.73593
Greece	0.02404	0.01073	0.03390	0.02167	0.22890	10.29766
Spain	0.05696	0.04054	0.08035	0.08191	-0.23109	-7.63788
France	0.06195	0.06241	0.08738	0.12608	-0.24214	-11.37382
Ireland	0.01380	0.00460	0.01947	0.00930	0.27318	30.09159
Italy	0.06182	0.05748	0.08721	0.11612	-0.30482	-10.69892
Cypus	0.00777	0.00170	0.01096	0.00344	0.11750	57.45829
Latvia	0.00777	0.00298	0.01095	0.00602	0.31897	42.05522
Lithuania	0.01379	0.00392	0.01946	0.00792	0.31561	34.46433
Luxembourg	0.00776	0.00144	0.01094	0.00291	0.28121	61.86470
Hungary	0.02402	0.00978	0.03389	0.01976	0.27570	12.17527
Malta	0.00577	0.00139	0.00814	0.00281	0.24558	62.66979
Netherlands	0.02598	0.01547	0.03664	0.03124	0.26755	3.87376
Austria	0.01987	0.00816	0.02802	0.01649	0.29438	16.02236
Poland	0.05678	0.03579	0.08010	0.07231	-0.26337	-8.11484
Portugal	0.02403	0.01021	0.03390	0.02063	0.25224	11.31707
Romania	0.02819	0.02053	0.03976	0.04147	0.22759	-0.02604
Slovenia	0.00777	0.00273	0.01096	0.00552	0.23758	44.49596
Slovakia	0.01380	0.00562	0.01946	0.01136	0.30000	24.86375
Finland	0.01380	0.00551	0.01946	0.01113	0.30227	25.36750
Sweden	0.01986	0.00886	0.02802	0.01790	0.31283	14.23559
United Kingdom	0.06186	0.05940	0.08726	0.12001	-0.31104	-10.96768
CM aggregate	0.70894	0.49498	1.00000	1.00000	4.04816	503.68101
Commission	0.19540	0.45795	n.a.	n.a.	n.a.	n.a.

The two right-most columns give the differences between the $\bar{xi}^p$ and ϕ. Note that one interpretation of ϕ is a probability of being pivotal. Hence $\bar{xi}^p$ is its strategic counterpart. As the tables demonstrate these probabilities differ. Let us next investigate the differences more generally and more in detail.

5 The differences between strategic and non-strategic power

At first sight, as demonstrated above, the classical ϕ and, on the other hand, the ξ and especially $\bar{\xi}^p$ have substantial similarities in uni-dimensional policy space. Clearly, ϕ and ξ would not coinside simply because the latter does not sum up to unity. This leads to interesting follow-up question to what extent the differences arise due to scaling or due to strategic and procedural aspects. Moreover, the equilibrium outcome of the consultation procedure can be divided into four different cases (see Fig. 2) and ϕ considers only one of them. Therefore, it is extremely enlightening to compare $\bar{\xi}^p$ and ϕ. At the level of equilibrium outcome cases they have the same conditionalisation. Weighted voting in a strategic, spatial set-up might, however, make a difference since it might modify the distribution of pivotal positions with respect to the distribution of voting weights and with respect to the size of a minimal winning coalitions w.r.t. player i in CM.

ϕ [13] considers all possible orderings of the players and treats them as equally likely. For each ordering, the critical country is taken to be the one which first establishes a qualified majority when players are added to the empty coalition in ascending order (or, equivalently, in descending order). This is exactly the same as attributing power to the player at position μ_R for any given ideal point realization in our framework (or, corresponding to descending order, the player at position μ_L), provided that all countries' ideal points are drawn from an identical continuous probability distribution. So a country i's intra-CM ϕ value coincides with the probability $\Pr(\mu_i = \mu_R)$. Differences between countries' intra-CM ϕ- and ξ-values in game-theoretic analysis of the consultation procedure arise for three reasons:

(a) For ideal point configurations pertaining to cases IVa. or IVb., neither the player with ideal point μ_R nor the one at μ_L is, in fact, the critical member of the CM. Both status quo q and the Commission's ideal point γ lie outside the CM's Pareto set $[\mu_{(1)}, \mu_{(27)}]$. The Commission can anticipate that any proposal outside this set would be amended by a unanimous CM and optimally proposes its preferred boundary point $\mu_{(1)}$ or $\mu_{(27)}$. The pivotal player is therefore either the one at position $\mu_{(1)}$ or the one at $\mu_{(27)}$, and not player R or L as presumed by ϕ. Moving from ϕ values to $\bar{xi}^p$ values hence involves removing μ_R-positions from the counting (similarly μ_L-positions) and adding respective $\mu_{(1)}$ or $\mu_{(27)}$-positions instead. Whilst the probability $\Pr(\mu_i = \mu_R)$ depends on the weight distribution, the probabilities $\Pr(\mu_i = \mu_{(27)})$ or $\Pr(\mu_i = \mu_{(1)})$ do not: every country is equally likely to hold the most extreme policy position from a

[13] ϕ values are presented in Tab. 1

'veil of ignorance' perspective. The possibility that players are influencing the policy outcome when they are at the boundary rather than in the interior of $[\mu_{(1)}, \mu_{(27)}]$, i.e., that they hold a *boundary pivot position*, hence implies a redistribution of ϕ power from large to small countries: the intra-CM ϕ ignores boundary pivot positions and thereby understates small countries' power whilst it overstates large countries' power. We will refer to this as ϕ's *boundary pivot bias* in the following. Note that this bias *ceteris paribus* is more important, the greater is the chance to find the status quo outside of $[\mu_{(1)}, \mu_{(27)}]$. Assuming that 'gains from trade' always exist by fixing $q \equiv 0$ or $q \equiv 1$ therefore magnifies the understatement of small countries' power by ϕ.

(b) For ideal point configurations pertaining to case I, the players with ideal points μ_R or μ_L are *not* critical inside the CM because there exists neither a qualified majority for shifting q to the left nor one for shifting it to the right. The CM is *divided*; the status quo q will persist independently of the Commission's position γ. Because no CM member has any individual influence on the policy outcome for player orderings falling into case I, the corresponding critical positions counted by the intra-CM ϕ have to be discarded when one adopts a strategic notion power. If, hypothetically, the same proportion of critical positions were discarded for all players, ϕ and $\bar{xi}^p$ values could still coincide. However, the former is not the case because the random position $x_i = \mu_R$ of a large country i conditional on the event $\{\mu_i = \mu_R\}$ tends to be closer to 1 than the corresponding position $x_j = \mu_R$ of a small country j conditional on the event $\{\mu_j = \mu_R\}$ (see Figure3; an analogous statement applies to μ_L and 0). Technically speaking, the distribution of x_i first-order stochastically dominates that of x_j. Paired with any given player other than i and j who is assumed to hold position μ_L, the interval $[\mu_L, \mu_R]$ is hence larger conditional on $\{\mu_i = \mu_R\}$ than conditional on $\{\mu_j = \mu_R\}$. This implies a greater probability for the random status quo q to lie inside $[\mu_L, \mu_R]$ in the former case. So relatively more ϕ-relevant critical positions of a large country i do not translate into a strategic pivotal position compared to a small country j. The ϕ hence overstates the relative power of large countries by counting a more than proportional number of critical positions which are in a strategic setting voided by the institutional status quo bias created by the CM's qualified majority rule. We will refer to this as *divided CM bias* of ϕ. Note that there are no CM divisions and hence no bias when $q \equiv 0$ or $q \equiv 1$.

(c) Finally, for ideal point configurations pertaining to case II, the player with ideal point μ_R (or, respectively, μ_L) is undoubtedly the critical player *inside the CM*. But he does not have any effect on the overall decision taken according to the Consultation procedure: if the Commission proposes its own ideal point, there will be no unanimous agreement in the CM to modify it and accepting the proposal is better for a qualified majority than keeping the status quo. So even though the player at position μ_R – or, analogously, the player at position μ_L depending on whether $q > \mu_R$ or $q < \mu_L$ – is powerful from a purely intra-CM perspective, he is irrelevant in the strategic interaction between CM and Commission. The fact that some ϕ-relevant critical positions do not translate into strategic pivot positions might hypothetically affect large and small countries proportionately and then induce no difference between $\bar{xi}^p$ and ϕ. However, the event of the Commission being able to pass its own ideal point γ is more likely, the greater is the distance between μ_R and q and hence the interval $[\tilde{\mu}_R, \mu_R]$ (analogously for $[\mu_L, \tilde{\mu}_L]$ (see Figure 3). Case II only applies to situations with $q > \mu_R$ and thus occurs more rarely for large μ_R values. We already pointed out that the random position $x_i = \mu_R$ of a large country i conditional on the event $\{\mu_i = \mu_R\}$ tends to be larger than the corresponding random position $x_j = \mu_R$ of a small country j conditional on the event $\{\mu_j = \mu_R\}$. It follows that relatively fewer critical positions of large countries fail to translate into an actual influence on the policy outcome. We refer to this as the *agenda power bias*: ϕ tends of overstate the relative power of small countries by counting a more than proportional number of critical positions which are voided by control of the Commission over the policy proposal (and, of course, the unanimity requirement for amendments). Note that this bias is particularly pronounced when the Commission's ideal points are concentrated in the middle of the policy space. If the Commission position is, for example, always assumed to coincide with the CM's median position $\mu_{(14)}$, then small countries whose μ_R positions mostly occur at $\mu_{(15)}$, i.e., very often with greater distance to q than to $\mu_{(14)}$, have few μ_R-positions that translate into an actual policy influence.

To summarise the effects we can write the following conclusion

Conclusion 1

In consultation procedure, the difference between the intra-CM ϕ and intra-CM $\bar{xi}^p$ can be explained by boundary pivot, divided CM and agenda power biases. The boundary pivot and divided CM bias makes ϕ to understate small countries power and overstate big countries power compared to $\bar{xi}^p$. For the agenda power bias the opposite holds. Generally, the aggregate effect of the three biases in ambiguous.

The divided CM and the agenda power biases are driven by differences in the conditional pivotal position of large and small countries (see Fig. 3). These differences are increased by the increased weight heterogeneity of the Lisbon Treaty. Specifically, the agenda power bias is bigger under the Lisbon provisions because Malta, Cyprus, etc. basically are critical inside the CM only when the "at least 15 member states"-requirement of the Treaty is binding; in contrast, Germany is often critical according to the weight requirement and at positions $\mu_{(17)}$ or $\mu_{(18)}$ which make it less likely that the Commission's ideal point γ can be passed. The divided CM bias, in contrast, is smaller for the Lisbon Treaty: all countries tend to be located closer to the median position conditional on being critical in the CM because the Lisbon rules are closer to simple majority than are the Nice rules. This makes the interval $[\mu_L, \mu_R]$ smaller on average, and decreases the probability of the status quo q lying inside. Much fewer μ_R-positions counted by ϕ hence need to be discarded. This reduces ϕ's overstatement of large countries' relative power associated with divided Councils.

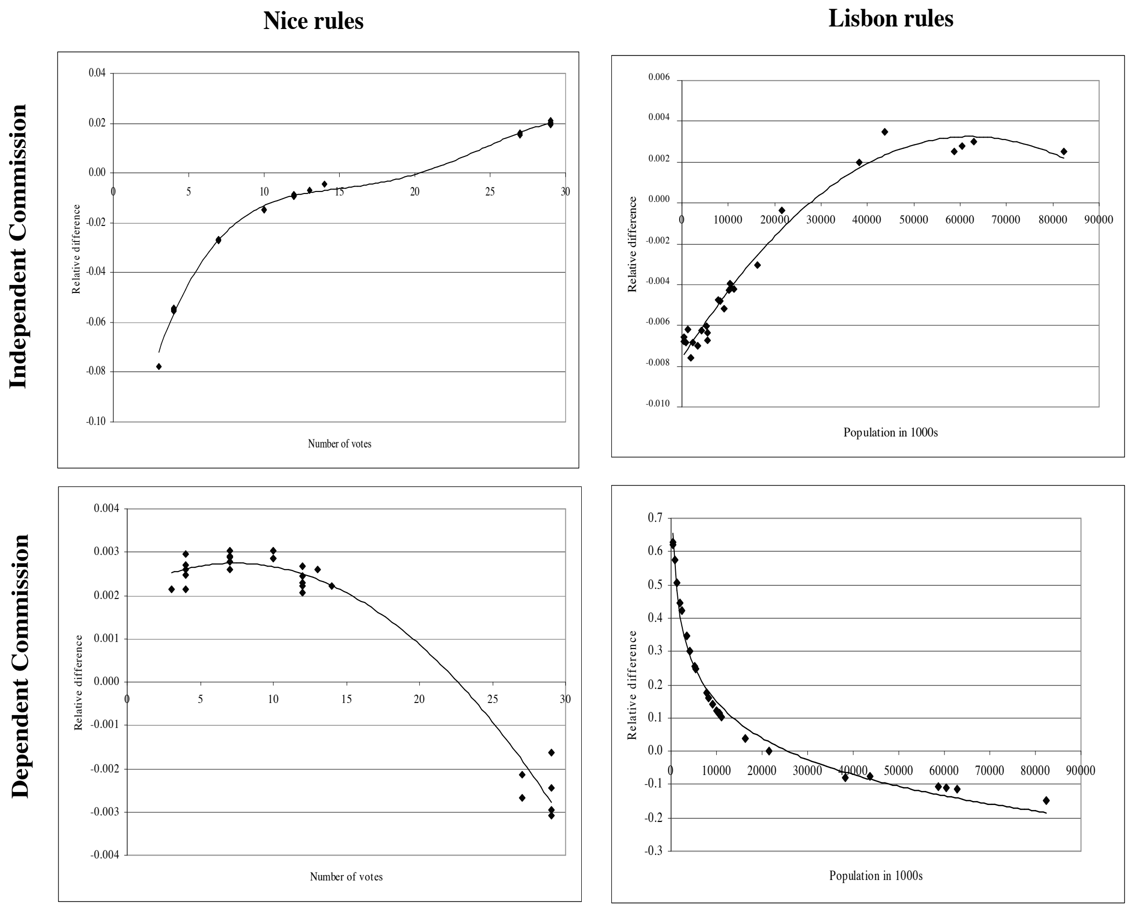

Figure 4: The relative differences between ϕ and $\bar{\xi}^p$ in the Consultation procedure

Increased overstatements of small countries' power by ϕ associated with an increased agenda power bias combined with decreased overstatements of large countries' power caused by a reduced divided CM bias mean that ϕ is more prone to overstate small and understate large countries' relative power under the Lisbon Treaty than current Nice rules. It turns out that the boundary pivot and divided CM biases still dominate the agenda power bias under the assumption of an independent Commission: ϕ overall understates small countries' relative strategic power and overstates that of the large countries. But as can be expected, this tendency is considerably mitigated by the Lisbon rules (see Fig. 4).

Fig. 4 also demonstrates that assumptions about the Commission's ideal point γ play an important role. If, as an extreme benchmark γ is always equated with the CM's median position $\mu_{(14)}$ instead of being an independent draw from the same distribution as CM members' positions, then there are no boundary pivot positions and hence no corresponding bias. Moreover, the agenda power bias becomes more relevant when γ is varying mainly in a small neighborhood of 0.5 rather than uniformly on $\mathbf{X}$. Both allows ϕ to mildly *over*state small countries power even under the Nice rules in total. This overstatement rises drastically according to the Lisbon Treaty. If the Commission were in reality more of a dependant rather than independent player, one would have to question the suitability of ϕ-based power analysis. However, it turns out to be a power measure that is broadly in line with strategic power measurements under the common view of independence. But, also in that case it is worth noting that voting rules matter. The differences are roughly 10-fold under the the Nice rules compared to Lisbon rules and, in fact, ϕ mimics the $\bar{\xi}^p$ much better under the Nice rules when EC is assumed to be dependent. In sum, ϕ is closest to the $\bar{\xi}^p$ in Nice rules when EC is dependent but in Lisbon rules when EC is independent. This implies that we are not able to draw conclusions whether independent or dependent EC assumption produces the $\bar{\xi}^p$ values that the ϕ is able to dominantly mimic regardless of the voting rule. Generally, we cannot say when ϕ a relatively good proxy for for $\bar{\xi}^p$ and when it is a very bad one.

Note that Fig. 4 shows ϕ's misstatement of strategic power relative to the normalized strategic pivot probability, not to the strategic measure of power ξ introduced by Napel and Widgrén (2004). The latter is based on the sensitivity of the outcome with respect to shifts of the considered player's ideal point, and thus the player's importance as a target of lobbying. Critical positions inside the CM that translate into influence on the outcome according to cases IIIa. and IIIb. enter ξ with twice the weight of, e.g., a boundary pivot position. This is another source of divergence between relative strategic power and intra-CM ϕ-values. Let us refer to this as *double shift bias*, which implies that ϕ understates big countries strategic power. According to the intra-CM ϕ big countries hold the pivotal position (cases IIIa. and IIIb.) more often than the small countries. Hence in terms of strategic power the big countries lose more double shifts than the small ones.

Conclusion 2

Other things being given due to double shift bias, in consultation procedure ϕ understates big countries power compared to the $\bar{xi}$.

Table 4: The Components of Difference between ϕ and $\bar{\xi}$, probabilities of occurrence

Independent EC	Nice	Lisbon
Boundary pivot bias	0.005	0.006
Divided CM bias	0.533	0.432
Agenda power bias	0.169	0.274
Double shift bias	0.293	0.288
Dependent EC	Nice	Lisbon
Boundary pivot bias	0.000	0.000
Divided CM bias	0.450	0.294
Agenda power bias	0.195	0.458
Double shift bias	0.354	0.247

Using the strategic measure of power might, however give us some more detailed information about the average magnitudes of the above mentioned three biases and also about the magnitude of the fourth bias caused by the fact that the outcome falls to cases IIIa. and IIIb. in which the pivotal CM player gets double score compared to either the boundary pivot or the Commission. Note, however, that cases IIIa. and IIIb. are otherwise reminiscent to ϕ.

Tab. 4 clearly demonstrates that in most cases the divided CM bias has the major role in contributing to the difference the only difference being the Lisbon rules and dependent Commission. The probabilities in Tab. 4 also give some intuition for the shapes of the curves in Fig. 4. The most extreme case is the combination of the Lisbon rules and dependent Commission. The probability of agenda setting and double shift bias together is 70%. The big countries are, thus, very strongly understated, which can be easily observed from the South-East panel of Fig. 4. The respective probability of the Nice independent Commission combination is 55% and, again, we get a curve that has a downward slope in country size. If we assume independent Commission the Nice rules give intuitive outcome. The big countries are overstated because the probability of boundary pivot and divided CM biases exceeds 0.5. The combination of Lisbon rules and independent Commission seems to behave counter-intuitively. The probability of boundary pivot and divided CM biases is only 0.44 and still the big countries are overstated by ϕ. This is simply due to the fact that Tab. 4 gives only the probabilities of occurrence of the four biases, not the magnitudes of the biases.

6 Discussion

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