A discusión

ON THE DIFFICULTY OF MAKING DECISIONS WITHIN THE EU-25[*]

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ABSTRACT

In this paper we measure the effect of the quota on the difficulty of making decisions in the EU-25 Council after the next enlargement. We compute the probability of a proposal being rejected in the Council. This probability depends on the voting rule (and therefore on the quota) and on the probabilities of the different vote configurations. Here we do not consider that all vote configurations are equiprobable, the classical implicit or explicit assumption. We assume that vote configurations with a minority of members states in favour of the proposal have a null probability, with other vote configurations being equiprobable.

Keywords: European Council, Decision making, Voting rules, European enlargement.

1 Introduction

The modification of the main voting rule in the Council (the so-called qualified majority rule, or QMV) was one of the main tasks of the last intergovernmental conference held in Nice in December 2000. The Treaty of Nice specifies the following requirements for the new qualified majority rule for the Council. Weights were allocated for the possible 27 member states, the weights of the existing member states were modified, and new weights were assigned to the 12 potential candidates. For a proposal from the Commission to be passed, the sum of the weights must reach a certain threshold or quota. This quota is specified in the Treaty for two extreme scenarios: for the current Union of 15 members and for an enlarged Union of 27 members. But "It was impossible to determine at Nice an absolute figure in terms of votes for the QMV threshold for every intermediate configuration of the Union, since it would depend on which candidate states joined the Union in which order" (Galloway, 2001, p. 83). It was also stipulated that for passing a decision votes in favour had to be cast by a majority of the members, and an optional "population safety net" clause must be respected.

The European Council meeting held in Copenhagen in December 2002 concluded with the completion of accession negotiations with 10 of the 12 potential candidates (for Rumania and Bulgaria accession was delayed). By November 2004 the European Union will be a Union of 25 members. For this enlarged Union, the qualified majority rule is not completely specified. Although the weights of the member states are known, as they were "set in stone" at Nice, the threshold for passing a proposal remains to be decided. The choice of the threshold is clearly an important issue: "there is one crucial element that will remain negotiable: the level of the QMV threshold. This will become a key institutional battleground in each treaty of accession, as heralded in the declaration on the threshold." (Galloway, 2001, p. 93).

There exists an extensive academic literature that studies the effects of the Treaty of Nice for the Union of either 15 or 27 members. See, for instance, Felsenthal and Machover (2001), Leech (2001), Lane and Maeland (2002) or Leech and Machover (2002). A clear conclusion is that the voting rule will make the acceptance of proposals in the Council more difficult. Most approaches rely on the usual choice of considering all vote configurations equally probable, although the proposals to be voted upon usually require some minimal previous support. These conclusions, and more basically the approach itself, are challenged by some practitioners (see, for instance, Mosberg (2002)).

The approach adopted here departs from the classical literature, as we relax the assumption of all possible vote configurations being equiprobable. As any proposal from the Commission naturally has the support of the Commission, we assume that such proposals have the support of more than half the member states. That is, those vote configurations in the Council that do not have this minimal support are considered as impossible (having zero probability), while all vote configurations beyond this threshold are considered equally probable. With these assumptions on the probabilities of the different vote configurations, we compute the probability of a proposal being rejected for a large range of possible quotas in the EU-25's Council.

2 Basic model

Two separate elements are involved in any collective decision-making process, or *v*oting situation as we will call it: the voters and the voting rule[1]. The voting rule specifies which vote configurations are *w*inning, that is, will entail the approval of the proposal, which otherwise would be rejected. If $N = \{1, 2, .., n\}$ denotes the set of seats (as well as the voters occupying them), and any vote different from 'yes' is assimilated to 'no', there are 2^n possible vote configurations. Each vote configuration can be represented by the set $S \subseteq N$ of 'yes' voters. The cardinal of a vote configuration $S \subseteq N$ (i.e., the number of 'yes' voters in it) will be denoted by s. Thus an N-*v*oting rule is fully specified by the set $\mathcal{W}$ of *w*inning configurations. It is usually assumed that: (i) $N \in \mathcal{W}$; (ii) $\emptyset \notin \mathcal{W}$; (iii) If $S \in \mathcal{W}$, then $T \in \mathcal{W}$ for any T containing S; and (iv) If $S \in \mathcal{W}$ then $N \backslash S \notin \mathcal{W}$. The last condition prevents the possibility of a proposal and its opposite both being passed if they are supported by two disjoint groups of voters. The cardinal of $\mathcal{W}$ will be denoted by $\mid \mathcal{W} \mid$.

We are interested in weighted majority rules here. A *w*eight $w_i \geq 0$ is associated with each seat i, and a certain *q*uota $Q > 0$, such that $\frac{1}{2} \sum_{i \in N} w_i < Q \leq \sum_{i \in N} w_i$ is given. For each vote configuration $S \subseteq N$, we denote by $w(S)$ the sum of the weights in favour of the proposal, that is, $w(S) := \sum_{i \in S} w_i$. The *w*eighted majority voting rule $\mathcal{W}$ specified by Q and $(w_i)_{i \in N}$ is

$$\mathcal{W} = \{S \subseteq N : w(S) \geq Q\}.$$

The voters' behaviour is the second ingredient in a voting situation, but in general it is not known in advance how voters are going to vote. In our model the voters' behaviour is represented by a probability distribution over all possible vote configurations, which can be seen as an estimate of the likelihood of different vote configurations from the available information. The probability of the vote configuration S (i.e., all voters in S voting 'yes' and those in $N \setminus S$ voting 'no') is denoted by $p(S)$. Thus $0 \leq p(S) \leq 1$ for

[1] The basic framework, notation and terminology presented in this section are taken from Laruelle and Valenciano (2002).

any $S \subseteq N$, and $\sum_{S \subseteq N} p(S) = 1$. This distribution is a black-box-like probabilistic summary of the voters' behaviour, which reflects the relative proximity of the voters' preferences, their relationships, or any contextual information that conditions their voting behaviour, summarizing it in probabilistic terms.

Thus a voting situation consists of a pair $(\mathcal{W}, p)$, where $\mathcal{W}$ is a voting rule and p represents a probability distribution over the vote configurations. From these two inputs, one can compute the probability of a proposal to be accepted or to be rejected. These are simply given by

$$\alpha(\mathcal{W}, p) := \text{Prob}\{\text{acceptance}\} = \sum_{S:S\in\mathcal{W}} p(S), \tag{1}$$

while

$$\bar{\alpha}(\mathcal{W}, p) := \text{Prob}\{\text{rejection}\} = \sum_{S:S\notin\mathcal{W}} p(S) = 1 - \alpha(\mathcal{W}, p).$$

Thus $\alpha(\mathcal{W}, p)$ is a natural generalisation of Coleman's (1971) 'power of a collectivity to act' by means of rule $\mathcal{W}$, denoted by $A(\mathcal{W})$ and given by the ratio of winning configurations w.r.t. the total number of vote configurations (2^n). Note this is the particular case of (1) in which all vote configurations are equally probable. That is, denoting by p^* the probability distribution such that $p^*(S) = 1/2^n$ for all S,

$$A(\mathcal{W}) := \frac{\mid \mathcal{W} \mid}{2^n} = \sum_{S:S\in\mathcal{W}} \frac{1}{2^n} = \alpha(\mathcal{W}, p^*). \tag{2}$$

Coleman's 'power of a collectivity to act' is thus an evaluation of the easiness of decision-making, and $\overline{A}(\mathcal{W}) := 1 - A(\mathcal{W})$ of its difficulty. This index, like other indices based on the same probability distribution[2], can be justified on normative grounds as an a priori evaluation based on the rule itself, ignoring the bias that actual voters would give to the probability of different vote configurations.

A variant of Coleman's measure of the difficulty of making decisions is Felsenthal and Machover's (1998, 2001) 'resistance coefficient', which is the result of re-scaling $\overline{A}(\mathcal{W})$ in a way that reaches its minimum ($R(\mathcal{W}) = 0$) for the simple majority rule (if n is odd) and its maximum ($R(\mathcal{W}) = 1$) for the unanimous rule, and is given by

$$R(\mathcal{W}) := \frac{2^{n-1} - \mid \mathcal{W} \mid}{2^{n-1} - 1} = \frac{2^{n-1} - 2^n A(\mathcal{W})}{2^{n-1} - 1} = \frac{2^n(\overline{A}(\mathcal{W}) - 1/2)}{2^{n-1} - 1}.$$

The drawback of this affine transformation of $\overline{A}(\mathcal{W})$ is that its probabilistic interpretation is lost.

[2]Banzhaf (1965) index, Coleman's (1971) power to intiate and to prevent action, and König and Bräuninger's (1998) index can be seen as conditional variants associated with this probability distribution (see Laruelle and Valenciano (2002)).

On the other hand, the choice of considering all vote configurations equally probable, seems unrealistic in the sense that the proposals to be voted upon usually require some minimal previous support, with $A(\mathcal{W})$ ($\overline{A}(\mathcal{W})$) resulting in too low (high) an evaluation of the easiness (difficulty) to make decisions[3]. As a compromise between the extreme choice of equal probability of all vote configurations and the requirement of a minimal degree of support, it can be assumed that those configurations in which the support is below a certain level have probability 0, while the rest are equally probable.

3 EU-25 voting rule

The Treaty of Nice redistributed the weights of the member states in the Council and allocated weights to the candidate countries that were considered at the time of the intergovernmental conference preceding the Treaty. The weights were allocated for a Union of 27 members (EU-27), but the quota for passing a proposal is specified only in two cases: when the EU remains at 15 members (in which case the quota is set at 169 votes) and when the EU is enlarged to 27 members (in which case the quota will be set at 258 votes). The Treaty adds a requirement that did not exist previously: acts of the Council will require (in both cases) that votes in favour of a proposal from the Commission are cast by at least half of the members of the Council[4].

For the EU-25, the distribution of weights and the requirement that half the members states are in favour of the proposal are clear, but the level of the quota is not settled. The Treaty only specifies that: "Insofar as all the candidate countries listed in the Declaration on the enlargement of the European Union have not yet acceded to the Union when the new vote weightings take effect (January 2005), the threshold for a qualified majority will move, according to the pace of accessions, from a percentage below the current one to a maximum of 73.4%."

The EU-25 voting rule is thus a function of the quota, still unknown. If the "population safety net" is ignored, it can be modelled as follows:

$$\mathcal{W}^1(Q) = \left\{ S \subseteq N : \sum_{i \in S} w_i \geq Q \text{ and } s \geq 13 \right\},$$

[3]Power indices have often been criticized (see, for instance, Garrett and Tsebelis (1999)) on the basis that the actual voters' preferences are ignored. In fact, the criticism addresses mainly the particular distribution of probability p^*, but the voters' preferences, like any other factors that can influence their voting behaviour, could in principle be included via p in the general model of a voting situation. This would permit a more realistic assessment of the actual probabilities of a proposal being accepted or rejected.

[4]In other cases (if the proposal does not come from the Commission) the votes in favour must be cast by at least two-thirds of the members. We do not consider this case here.

where n =25 and the weights w_i are known and given in Table 1, while the quota can vary. We consider the whole range of possible quotas. As the total number of votes is 321, we consider the quotas between 161 and 321. Special emphasis is given to the most likely quotas, which are around 71% ($Q \approx 228$).

The Treaty adds the "population safety net" clause that stipulates: "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 been met, the decision in question shall not be adopted."

The specification of the voting rule with this additional requirement is the following

$$\mathcal{W}^2(Q) = \left\{ S \subseteq N : \sum_{i \in S} w_i \geq Q,\ s \geq 13 \text{ and } \sum_{i \in S} Pop_i \geq 0.62 \sum_{j \in N} Pop_j \right\},$$

where Pop_i is state i's population.

The application of this clause entails two difficulties. The first one is that the population requirement is not compulsory. It is up to the member states to decide whether to require it or not. In practice, it is difficult to predict whether the member states will invoke this condition[5]. The second difficulty is technical: in order to check the population criterion the population figures are necessary, but they do not appear in the Treaty. In view of these difficulties we consider separately the two rules that result from ignoring or taking into account this clause.

The data used to compute the probability that a proposal will be rejected are in Table 1, which shows the member states and the candidate states for a Union of 25 members, with the weights given by the Treaty and their respective populations (data quoted from Galloway (2001), source EUROSTAT 2000).

As stated in section 2, the second ingredient in a voting situation is the voters' voting behaviour. The classical implicit or explicit assumption for the assessment of voting situations is that all voting configurations have the same probability. Although this assumption is justified for normative purposes, it has been criticized as unrealistic. As stated

[5]Here a comparison can be made with the 'Ioannina compromise' that raised the possibility of requiring the Council to find a solution that can be adopted by at least 65 votes instead of the usual 62 votes. Nevertheless "the compromise had little practical effect on decision-making and has to date only been threatened or formally invoked (unsuccessfully) before a ministerial vote on rare occasions" (Galloway, 2001, p. 70, also for the framing of the 'compromise').

i	Pop_i	w_i
Germany	82165	29
United Kingdom	59623	29
France	58747	29
Italy	57680	29
Spain	39442	27
Poland	38654	27
Netherlands	15864	13
Greece	10546	12
Czech Republic	10278	12
Belgium	10239	12
Hungary	10043	12
Portugal	9998	12
Sweden	8861	10
Austria	8092	10
Slovakia	5399	7
Denmark	5330	7
Finland	5171	7
Ireland	3775	7
Lithuania	3699	7
Latvia	2424	4
Slovenia	1988	4
Estonia	1439	4
Cyprus	755	4
Luxemburg	436	4
Malta	380	3
Total		321

Table 1: Populations and Weights for EU-25. Source: EUROSTAT 2000 quoted from Galloway (2001).

by Mosberg (2002, p. 261): "the vast majority of the millions of theoretically conceivable coalitions are highly unlikely." This criticism is absolutely right from a positive or descriptive point of view. Here we correct this assumption by excluding some vote configurations that are sure not to occur. When a proposal from the Commission reaches the Council it has the support of at least some member states. Thus the probability that all member states will vote against the proposal must be zero. More generally, we assume that any proposal that reaches the Council has the support of more than half the member states, as otherwise it would have been blocked in the Commission. That is, the probability of any vote configuration that represents support below this level is set at zero. In the absence of any further information on the vote situation we consider that all other vote configurations are equiprobable. This leads to the distribution of probability on the vote configurations,

$$\tilde{p}(S) := \begin{cases} 1/x \text{ if } s > \frac{n}{2} \\ 0 \text{ otherwise,} \end{cases}$$

where x denotes the number of vote configurations where $s > \frac{n}{2}$. If n is odd, (as happens to be the case in EU-25) $x = 2^{n-1}$, half the total number of vote configurations.

4 Results

The probability of a proposal being rejected has been calculated for different quotas, assuming the voting behaviour in the Council described by $\tilde{p}$. That is,

$$\overline{\alpha}(\mathcal{W}^i(Q), \tilde{p}) = 1 - \alpha(\mathcal{W}^i(Q), \tilde{p}) = 1 - \sum_{S: S \in \mathcal{W}^i(Q)} \tilde{p}(S),$$

for either rule ($i = 1, 2$) and different quotas[6]. We consider a range of quotas between 161 and 321, the smallest corresponding to the smallest quota above half the total aggregated weight, and the largest being the quota that corresponds to the unanimity rule.

In Figure 1 the probabilities of a proposal being rejected for the rule $\mathcal{W}^1(Q)$ (with only one additional requirement: number of states), and the rule $\mathcal{W}^2(Q)$ (with two additional requirements apart from the quota: population and number of states) are represented for the different quotas within the specified range.

[6] In this case, as n is odd, and for any $S \in \mathcal{W}^i(Q)$ it holds that $s > \frac{n}{2}$, for both rules we have

$$\alpha(\mathcal{W}^i(Q), \tilde{p}) = 2A(\mathcal{W}^i(Q)).$$

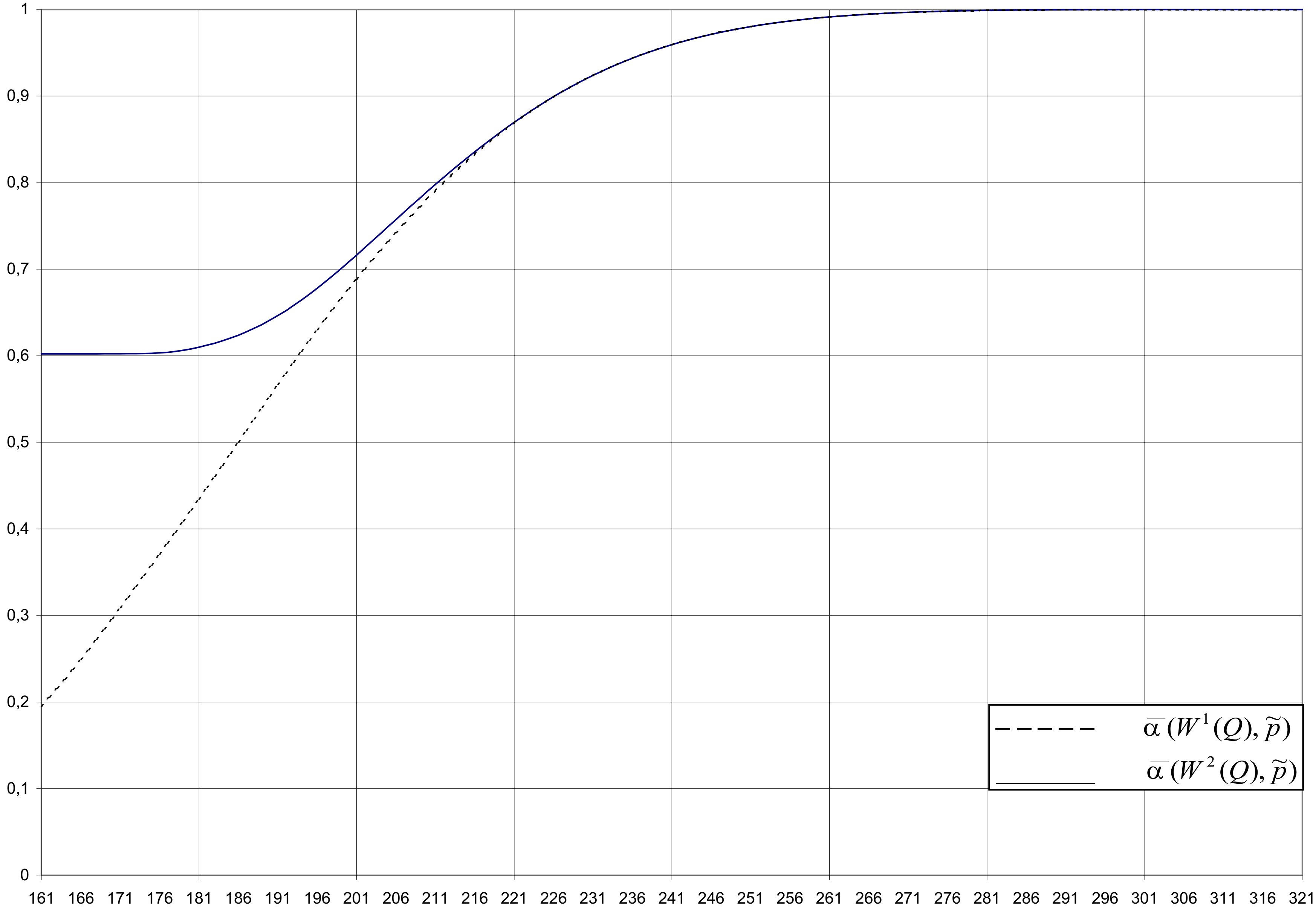

Figure 1: Probabilities of a proposal being rejected for $\mathcal{W}^1(Q)$ and $\mathcal{W}^2(Q)$

As can be seen from Figure 1, these probabilities are clearly sensitive to the quota for both rules. For $\mathcal{W}^1(Q)$ this probability goes from 0.2 to nearly 1 for the range of quotas considered. The change in probabilities is large for quotas smaller than 250. Of course, with the population requirement (rule $\mathcal{W}^2(Q)$), the probability of rejection of a proposal is larger, going from 0.6 to close to 1 as the quota goes from 161 to the maximum. In this case the change in probabilities is especially notable between the quota of 180 and that of 250 (passing from 0.60 to 0.98),

The difference between these probabilities for either rule is very large for small quotas, and very much smaller for quotas larger than 200. So with a quota of 161, the population requirement entails a probability of rejection of 0.6, while relaxing the population requirement the probability drops to 0.2, but above a quota of about 215 the probabilities of rejection for both rules become very close, till for a quota of 237 the population requirement no longer plays any role: this requirement is fulfilled once the other two are met, and both rules coincide.

As noted in Galloway (2001), prior to the Treaty of Nice, the threshold for achieving a qualified majority in terms of weighted votes remained practically unchanged for each successive configuration of the EU at around 71% of total votes. In Nice the threshold was pushed for the first time above 71.5% in order to secure the position of Spain (see Galloway, p. 84). In the hypothetical European Union of 27, the threshold would have been 74.78%. As the Treaty also specifies that the maximum threshold is 73.4%, the most probable quotas will be between 70% (Q=225) and 73.5% (Q=236) of the total number of votes. For this range of quotas, the difference between the two rules is very small, and the probability of rejection is rather high, ranging from 0.9 to 0.94, and very similar for both voting rules (indistinguishable in Figure 1, as the differences are of the order of 10^{-3} or 10^{-6}).

Figure 2 gives the evolution of the difficulty of a proposal being accepted from 1958 under the same assumption, that is, assuming that only vote configurations in which more than half the member states support the proposal occur, all such configurations being equiprobable.

With the sole exception of the 1981 enlargement to EU-10 (after the accession of Greece), the probability of rejection has increased after every enlargement. For EU-25, the range of difficulty corresponding to the range of quotas under consideration by the EU (between 70% and 73.5% of the total number of votes) and either of the two rules $\mathcal{W}^1(Q)$ or $\mathcal{W}^2(Q)$

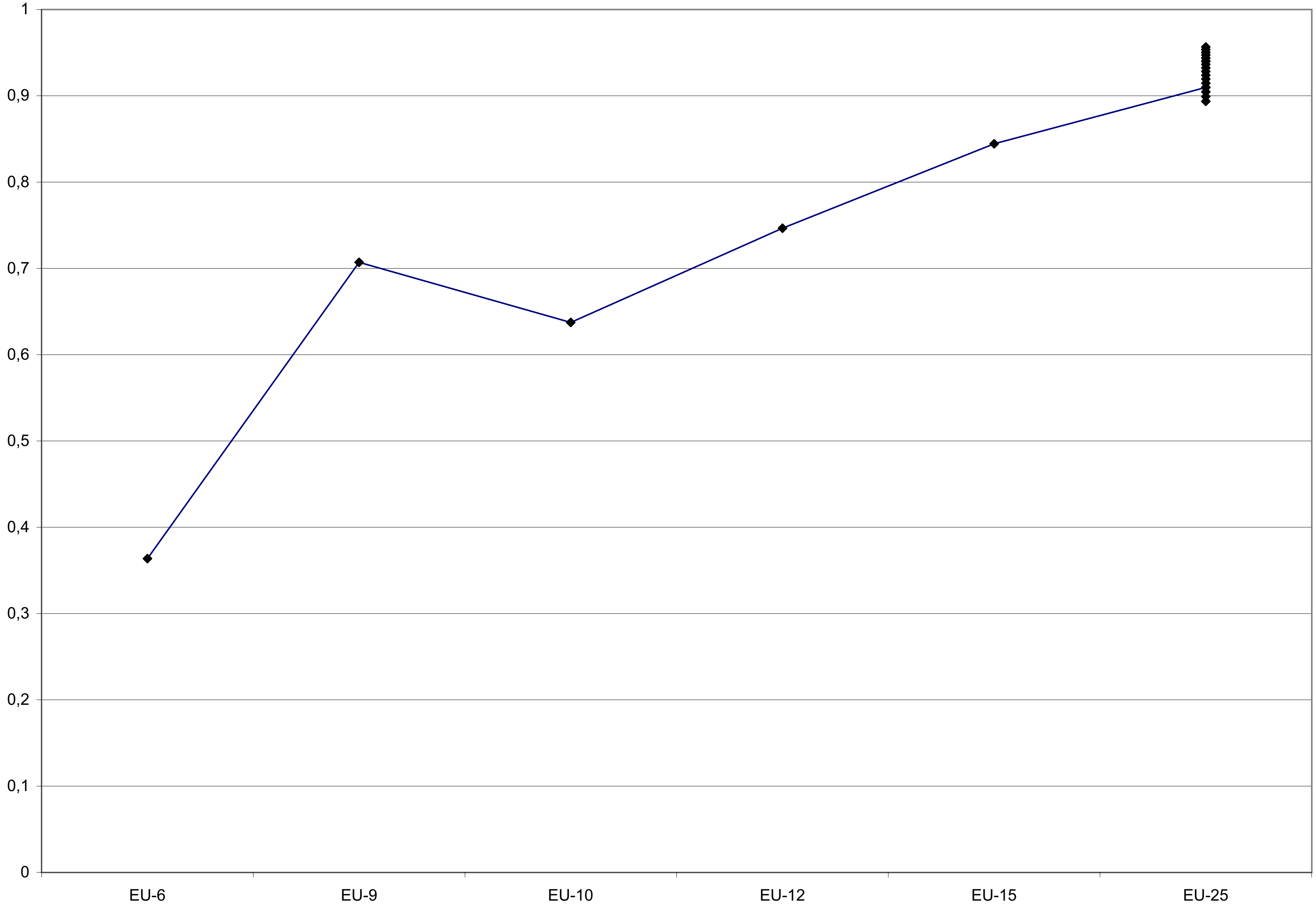

Figure 2: Probabilities of a proposal being rejected from EU-6 to EU-25

is represented. The next enlargement will thus surely imply a new increase in the difficulty of making decisions.

5 Conclusion

The main conclusion of the paper is that for the range of most probable quotas, the probability of a proposal being rejected is rather high, at above 0.9. The paper also shows that the "safety net" of the population (the possibility of a member to require the confirmation that the member states constituting the qualified majority represent 62% of the total population) is not very effective once the quota is above 70%. This means that this clause is perhaps unnecessary as it will have little practical effect, and makes the Treaty more complex.

This means that this clause will have little practical effect, and is perhaps unnecessary as it only makes the Treaty more complex.

From the methodological point of view the paper hints at a possible line of further work. As recognized by a participant in Nice: "Most of the arguments have been based on marginal situations and extreme configurations of member states. This, more than any other factor, explains the outcome. The starting point for this can be traced back to the Amsterdam IGC, where one of the key issues was whether it would be legitimate to have a qualified majority composed of Council members representing less than 50% of the Union's population. Even if such a scenario could only occur in a highly improbable configuration of member states in a Union with more than 27 members, it was felt that the Union must not have a system that even allowed it as a hypothetical possibility." (Galloway, p. 92). The advantage of the approach taken here is that it permits us to take into account all possible vote configurations, and in principle it allows us to assign larger probabilities on the most probable ones. Therefore if data were available on the actual distribution of probability on the vote configurations, it would allow a reasonable picture of reality. The main practical difficulty of the approach lies in obtaining these data, and some research to collecting them would be worthwhile. As a first step, we have assumed here that those vote configurations that do not have the support of half the states have a null probability, and that the others are equiprobable. Although not completely realistic, this seems closer to reality than the classical assumption according to which all vote configurations are equiprobable.

References

[1] Banzhaf, J. F., 1965, Weighted Voting Doesn't Work: A Mathematical Analysis. *Rutgers Law Review* **19**, 317-343.

[2] Coleman, J. S., 1971, Control of Collectivities and the Power of a Collectivity to Act, in *Social Choice*, edited by B. Lieberman, Gordon and Breach, London. Reprint in: Coleman, J. S., 1986, *Individual Interests and Collective Action: Selected Essays*, Cambridge University Press.

[3] Felsenthal, D. S., and M. Machover, 1998, *The Measurement of Voting Power: Theory and Practice, Problems and Paradoxes*, Edward Elgar Publishers, London.

[4] Felsenthal, D. S., and M. Machover, 2001, The Treaty of Nice and qualified majority voting, *Social Choice and Welfare* **18**, 431-464.

[5] Garrett, G., and G. Tsebelis, 1999, Why Resist the Temptation to Apply Power Indices to the European Union?, *Journal of Theoretical Politics* **11**, 291-308.

[6] Galloway, D., 2001, *The Treaty of Nice and Beyond. Realities and Illusions of Power in the EU*, Sheffield Academis Press, Sheffield, England.

[7] König, T., and T. Bräuninger, 1998, The inclusiveness of European Decision Rules, *Journal of Theoretical Politics* **10**, 125-142.

[8] Lane, J. E., and R. Maeland, 2002, A note on Nice, *Journal of Theoretical Politics* **14(1)**, 123-128.

[9] Leech, 2001, Fair reweighting of the votes in the EU Council and the choice of Majority requirement for QMW during successive enlargements, Warwick Economic Research Papers 587, Department of Economics, University of Warwick, UK. Forthcoming in Public Choice

[10] Leech, D., and M. Machover, 2002, Qualified Majority Voting: The effect of the Quota, Mimeo.

[11] Laruelle, A., and F. Valenciano, 2002, Assessment of voting situations: the probabilistic foundations, *Working paper WP-AD 2002-22*, Departamento de Fundamentos del Análisis Económico, Universidad de Alicante, Spain.

[12] Mosberg, A., 2002, The Nice Treaty and Voting Rules in the Council, Journal of Common Market Studies **40**, 259-282.