Response to Schmidtchen

by Moshé Machover

My response to the paper 'Strategic Power in Policy Games' by Dieter Schmidtchen will be quite brief.

1. A welcome mutual confirmation

The first and most important comment I wish to make is that I am delighted with this paper.

The model proposed by Scmidtchen et al. consists of two distinct parts. The first part is a decision rule, a so-called 'simple game' or 'simple voting game'. The second part consists of a state space and state variables (which are random variables).

The decision rule operates in the conventional way: it tells us how the outcome of a division is determined by the way each of the voters votes.

The geometry of the state space and the probability distribution of the state variables incorporate information about such things as the actual state of the world, the future state of the world that would result if a proposed bill is passed, and the preferences of each voter. This second part of the model serves to model the motivation that leads each of the voters to vote in a particular way.

What I find very satisfying about the proposed strategic power index is the fact — proved by Felsenthal and me in our (2001) — that when the contribution of the second part of the model is reduced to the absolute minimum, the strategic power index reduces, essentially, to the Penrose measure (aka the 'absolute Banzhaf index') of voting power. Significantly, this result was not known to the authors of the strategic power index when they first proposed it. They did not design their strategic power index with this result in mind. It just happened this way.

Of course, I do not regard this as a mere coincidence. I believe that it vindicates Schmidtchen's approach to measuring actual (as distinct from a priori) voting power.

The kind of voting power that Schmidtchen is concerned with is clearly what Felsenthal and I have called 'I-power'; that is, power as influence of a given voter over the outcome of a division. We have also argued in our book (1998) as well as in (2001) that a correct method of measuring actual voting power should be organically connected with the method of measuring a priori power. The reason for this is that actual power is the result of a superposition of real-life factors (such as preferences) on the 'bare' decision rule itself. Schmidtchen's two-part model does precisely that; and when the contribution of the second part of the model is reduced to nothing, the result is the Penrose–Banzhaf measure, which is, in our view, the only valid measure of a priori I-power.

At the same time, this view of the Penrose–Banzhaf measure as the only valid measure of a priori I-power is also confirmed and reinforced by the work of Schmidtchen et al. Here is yet another example — the latest in a long line — where a new approach to measuring I-power is proposed and later turns out to produce either the Penrose–Banzhaf measure itself or, as in the present case, an appropriate generalization of it.

2. The need for an a priori measure

In order to prevent misunderstanding, I would like to add that the proposed strategic power index may supplement but cannot supplant the Penrose–Banzhaf measure (of which it is a far-reaching generalization).

As has been argued by many authors, the a priori approach is necessary when designing a new constitution of a decision-making body. For example, the EU is facing enlargement, which will necessitate re-designing of the so-called ‘qualified majority voting’ (QMV) rule, the weighted decision rule used by the Union’s Council of Ministers. This cannot be done on the basis of the concept of *real* voting power. The main reason for this — quite apart from the enormous difficulty of modelling preferences etc. in a sufficiently precise and realistic way — is that in designing QMV it would be wrong *in principle* to take the policy preferences of the various member-states into consideration. Suppose there are two member-states whose populations are of similar size, but having different policy preferences and interests. (For example, one has a right-wing conservative government while the other is ruled by a centre-left coalition; or one has a large fishing fleet while the other is land-locked.) Should they be given different voting weights on the Council of Ministers? Should the weighting be changed each time there is a change of government policy in one of the member-states? This would be *both* absurd *and* politically unacceptable (the two are not at all the same thing...). Clearly, when designing QMV one should only consider the a priori voting power of each member-state, the voting power that it has by virtue of the decision rule itself, irrespective of any political preferences.

3. Is I-power game theoretic?

Felsenthal and I have expressed in our (2001) and elsewhere the view that I-power is not in essence a game-theoretic concept, and that the amount of I-power of a voter has nothing to do with payoffs.

This seems to be contradicted by the fact that Scmidtchen’s model has a distinct game-theoretic character. Moreover, the distances in the state space — which enter into the calculation of the strategic power index — can be interpreted as some kind of payoff. Yet, the strategic power index is unmistakably a measure of I-power.

I think that the contradiction is only apparent, not real. First, let me point out that only the *second* part of the model — the state space and the distribution of the state variables — is game theoretic; and, by the way, it belongs to *non-cooperative* game theory. But, as I have already pointed out, this part of the model is concerned with the motivations that lead voters to vote in a particular way.

Now, Felsenthal and I have explicitly admitted that these motivations *may well be* game theoretic, and that a voter’s decision to vote one way or another *may well be* based on a calculation of expected payoff; see, for example, our (1998, p. 35). The point is that in the case of I-power (as opposed to that of P-power) these motivations and payoffs are exogenous to the decision rule. This is precisely the situation in Scmidtchen’s model: the decision rule resides in one part of the model, while the motivations and payoffs reside in the other part.

So I would still maintain that I-power is not *essentially* game theoretic, and that the amount of a voter’s I-power *need not be* connected to payoffs. But game-theoretic considerations, including those of payoff, may well come into it through the preferences and other motivating factors, which are exogenous to the decision rule.

References

Felsenthal S D and Machover M (1998) *The Measurement of Voting Power: Theory and Practice, Problems and Paradoxes*, Edward Elgar; Cheltenham.

Felsenthal S D and Machover M (2001) 'Myths and meanings of voting power: Comments on a symposium', *Journal of Theoretical Politics* **13**:81–97.