POLITICAL ECONOMY

NEW SZÉCHENYI PLAN

POLITICAL ECONOMY

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Week 3

The simple majority rule

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Why is simple majority so popular?

- Because it is much „faster” than unanimity in reaching decisions.
- But consider cycling – is it really faster?
  - Q: what were the arguments against cycling?
- So why do we use simple majority so often? (Hint: what would the average Joe say?)

Normative considerations

- Condorcet’s jury theorem
- May’s theorem on majority rule
- Rae–Taylor theorem on majority rule

We have seen that simple majority vote is special – but is it good?

Is simple majority a good way to aggrate information?

Ex. 5 people, all with a 60% chance to be right, vote.

Threshold	formula	Prob of the true alternative to pass
5 (unanimity)	$(0.6)^5$	7.78%
4 (qualified majority)	$(0.6)^5+5(0.4)\ (0.6)^4$	33.7%
3 (simple majority)	$(0.6)^5+5(0.4)\ (0.6)^4+10(0.4)^2(0.6)^3$	68.2%

In general:

$$P_n = \sum_{h=(n+1)/2}^{n} [\,n!\,/\,h!\,(n-h)!\,]\,p^h(1-p)^{n-h},$$

The jury theorem (Condorcet)

Theorem (Condorcet, 1785): Let n voters (n odd) choose between two alternatives that have equal likelihood of being correct a priori. Assume that voters make their judgments independently and that each has the same probability p of being correct (1/2 < p < 1). Then the probability that the group makes the correct judgment using the simple majority rule is

$$P_n = \sum_{h=(n+1)/2}^{n} [\, n! \,/\, h! \,(n-h)! \,] p^h (1-p)^{n-h},$$

which approaches 1 as n approaches infinity.

Limits of the jury theorem

Assumptions made:

- a common probability of being correct across all individuals, (and p>0.5)
- each individual’s choice is independent of all others, and
- each individual votes sincerely (honestly) taking into account only his own judgment as to the correct outcome.

Limit 1: common probability

- (if $p<0.5$ then P_n approaches 0 as n approaches infinity)
- However, if $P_i \neq P_j$, but the distribution of P is symmetric (and $P_{mean} > 0.5$), the theory still holds

Limit 2: choices are independent

- Is it realistic?

- Note: if correlation of votes is not too high, the theorem still holds (Ladha: a correlation of 0.25 is lowest upper bound)

Limit 3: sincere voting

- Is it optimal to vote sincerely?
- E.g. 2 urns with black and white balls
  - Here sincere voting is irrational: rational voting produces better outcomes
- (also: would a rational voter vote at all? We will discuss that later in the course)

- Condorcet considers voting a positive sum game, but is it so?

An axiomatic approach (May)

Def: a group decision function

$D = f(D_1, D_2, \ldots, D_n)$, *where D_i and D take the values*

–1, 0, or 1, and i's preference on a pair of issues x and y can be: xRy, xIy, yRx.

An axiomatic approach

Theorem (May, 1952):

Consider the following four properties

- *Decisiveness: The group decision function is defined and single valued for any given set of preference orderings.*
- *Anonymity: D is determined only by the values of D_i , and is independent of how they are assigned. Any permutation of these ballots leaves D unchanged.*

An axiomatic approach

- *Neutrality: If x defeats (ties) y for one set of individual preferences, and all individuals have the same ordinal rankings for z and w as for x and y, then z defeats (ties) w.*
- *Positive responsiveness: If D equals 0 or 1, and one individual changes his vote from −1 to 0 or 1, or from 0 to 1, and all other votes remain unchanged, then D = 1.*

An axiomatic approach

If and only if all four properties are true for f, f is the simple majority voting rule.

None follows from the other three!

(Also, simple majority does not satisfy e.g. transitivity. (!) So what do we have left?)

Let us consider the axioms!

Decisiveness – clear, but eliminates all probabilistic procedures, where the probability of an issue winning depends on voters preferences.

Positive responsiveness – also clear. It’s like Pareto, but stronger

Let us consider the axioms!

Neutrality – each *issue* is alike. Intensities do not matter. It eliminates several other voting procedures (e.g Borda count).

Anonimity – each *voter* is alike. Strong normative content (e.g. confiscation of John Doe’s property).

Smoking in a railroad car (Rae–Taylor)

- E.g. 5 passengers, no signs permitting or prohibiting smoking. What should the decision procedure be (without taking sides)?

Assumptions:

- Game of conflict
- No exit
- Issue is given (cannot be redefined)
- Issue is randomly selected (no agenda setter, no predefined preferences)
- Equal intensity cost-benefit

Rae (1969) and Taylor (1969): Majority rule is best.

Unanimity

- Political process is a cooperative, positive sum game, with transaction costs not being prohibitive.
- Being the member of the committee (community) is voluntary (exit option) and each has the right to preserve her own interest.
- Issues are proposed by committee members (failed issues are redefined or removed from agenda).
- E.g. firestation financed by taxes.

Unanimity, criticisms

- Politics is often a zero-sum game (e.g. what if no Pareto optimal choice is available, or Pareto-efficient choices are contrasted), distributional issues are always there.
- Exit is not always possible (e.g. railroad car example) – issues cannot always be redefined.
- Also, if transaction costs are significant (e.g. the train does not move until decision made) minority can force majority to capitulate.

Unanimity, criticisms

- Applying rules to the ”wrong” issues: firestation example – majority rule changes allocative efficiency into redistribution (and a bit of Pareto improvement)
  - But with logrolling (no stable coalitions) and quasi equal size winning and losing coalitions of differing composition *zero net* redistribution is expected

(But then why play the game?)

So how do unanimity and simple majority compare?

Assumption	Majority rule	Unanimity rule
1. Nature of the game[a]	Conflict, zero sum	Cooperative, positive sum
2. Nature of issues	Redistributions, property rights (some benefit, some lose)	Allocative efficiency improvements (public goods, externality elimination)
	Mutually exclusive issues of a single dimension[b]	Issues with potentially several dimensions and from which all can benefit[c]
3. Intensity	Equal on all issues[d]	No assumption made
4. Method of forming committee	Involuntary; members are exogenously or randomly brought together[e]	Voluntary; individuals of common interests and like preferences join[f]
5. Conditions of exit	Blocked, expensive[g]	Free
6. Choice of issues	Exogenously or impartially proposed[h]	Proposed by committee members[i]
7. Amendment of issues	Excluded, or constrained to avoid cycles[j]	Endogenous to committee process[i]