

# An introduction to electoral systems

That is: may we choose the best electoral system for a Parliament?

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Summer school on Game theory and Models of Voting, Campione d'Italia, September 9-10, 2012

# The answer is...

- ...*probably yes*, despite the theorem of Arrow (that states that a collective choice rule that guarantees the respect of the basic tenets of liberal philosophy CANNOT EXIST)
- What is the best? Wait and you'll see...

# Apologies

- I am not a mathematician. Hence possibly what I'll say will be so simple that mathematicians will not understand.
- (Also, my English is quite poor...)
- *You* are a quite mixed set. Hence something will be obvious for someone; hopefully, not everything will be obvious for anyone...
- Due to what above, *feel free to interrupt me* whenever you like.

# Outline of the lectures

- Classification of electoral systems
- Assessment of majority/plurality
- Assessment of proportionality
- The best electoral system
- *References*
- *The simulation of electoral systems*

# But first of all: the theorem of Arrow

- No collective choice rule may *guarantee* that:
  1. For each chooser, preferences are complete and transitive
  2. Choosers may choose any available alternative
  3. If all choosers prefer  $j$  to  $i$ ,  $j$  will be chosen
  4. If for all the choosers the preference order between  $j$  and  $i$  does not change, it will not change also for the collective choice, even if the preference order changes for *other* alternatives
  5. No chooser enjoys an extra decisional power.

*For a clear and calculus-free proof see Hargreaves Heap et al., 1992*

# IDEA classification of electoral systems

*IDEA is a UN sponsored agency dealing with electoral matters; see the references.*

- Plurality/Majority (ex. FPTP, TRS)
- Proportionality (including STV)
- Mixed
- Others
- *For a total of 11 main systems employed somewhere*

# The important ones...

- ...Are *Plurality*, *TRS*, *pure proportionality*, *modified proportionality*, *STV*, and
- *Condorcet* and *Borda*, which are not used anywhere
- The basic problem is to choose between M/P and proportionality
  
- See the IDEA handbook for details of the systems. It may be downloaded freely.

# How the systems work, 1

- Plurality (“British System”) and majority – obvious
- TRS (“French System”): if no candidate gets the majority, the first ones enter a second round
- Pure proportionality: obvious
- Modified proportionality: Threshold (Germany), Prize (Italy), District Magnitude (Spain)



# How the systems work, 2: modified proportionality

- The pure proportionality is supposed to create problems of *governability* (we'll return on this). Hence often it is corrected.
- Threshold: only the parties that obtain, say, 5% of votes enter the Parliament.
- Prized majority: the party or the coalition of parties that win a *plurality* get additional seats to reach the *majority*.
- District magnitude: the proportionality is (obviously) inversely related to the number of MPs elected in a district. There is an *empirical regularity formula* due to Lijphart according to which  $T=75/(D+1)$ , where T is an implicit threshold and D is the district magnitude. If for instance  $D=9$ , the loss of proportionality is the same as the one created by a threshold of 7.5%.

# How the systems work, 3: Single transferable vote

*Technicalities omitted*

The voter is requested to state her/his full order of preferences. District magnitude must be small, say 5. Be 1000 the number of voters. The candidates that get more than 200 votes are elected. If they are, as usual, less than 5, a random set of the votes that a candidate obtained in addition to 200 are transferred to the second choice of the voter, and the procedure is iterated until 5 candidates are chosen.

# How the systems work, 4

## Minor systems

Plurality/Majority:

Alternative, Block voting, Party block voting

Mixed:

Mixed-member proportionality, Parallel

Others:

Single non-transferable vote, Limited vote

# How the systems work, 5

## Not used minor systems

- Borda Count
- Approval voting

# How the systems work, 6

## Condorcet rule

- If we must choose between, say, 4 alternatives, we perform binary comparisons between all of them, where the one that gets the majority wins. If there is an alternative that wins all the “duels”, that alternative is the *Condorcet Winner*. If there is not, there is a *Condorcet Cycle*.
- Note that Condorcet is clearly superior to plurality. Once it was technically impossible to implement, presently it is no more.

# Defects of majority/plurality, 1: who's afraid of the theorem of Arrow?

- The **THEOREM OF MAY** disqualifies the theorem of Arrow. It states that
- *If the choice is between two alternatives, majority (and only it) respects ALL the requirements of the theorem of Arrows, but transitivity.*
- But intransitivity in parliamentary elections is extremely rare, practically impossible.
- The theorem refers to *two* alternatives, but is easily generalizable through Condorcet.

# Not only.

- The *theorem of Condorcet* says that if a group of decisors must choose, the probability that they will choose the best alternative increases with the dimension of the group.
- Hence, both May and Condorcet affirm that a large uninominal district will produce the best choice. Plurality, then (if not Condorcet...)
- Can you see the mistake in what above?

# Defects of majority/plurality, 2

- The problem is that a lot of voters will not be represented.
- Suppose a district with 49.9 of “exploited” and 50.1 of “exploiters”. The first ones will have an exploiter as their representative in the Chamber.
- Can you see a way out?



# Defects of majority/plurality, 3

- A way out has been suggested by Thomas Hare as early as in 1859: voters will enlist in a district chosen by themselves among a large array of choices.
- For instance, a blue-collar female working in Torino may choose whether to vote for the representative of Turinese blue-collar workers, of the feminist movement, or, say of the supporters of Juventus f.c.
- But...

# Defects of majority/plurality, 4

- The system will produce a fully *corporative* Parliament. Each MP will try to maximize the gain for her/his constituency, and this will make it very hard to govern.
- In technical terms, the *contracting costs* will be very high, as any bill will require the approval not of a set of *parties*, but of a *majority of MPs choosing as individuals*.
- As a result, *a supposed advantage of M/P (i.e. avoiding the cumbersome log-rolling of coalition governments by reducing the number of deciders) will fail. We'll return on this.*
- The problem will be more serious the more the society is differentiated; and modern societies are such.

# Assessment of majority/plurality, 1

- Hence, majority/plurality is fundamentally flawed. Either it leaves many (possibly most) voters without a representation, or it makes the activity of the government too cumbersome.
- More generally: majority/plurality may work if the voters share strong common interests, and they have to choose someone to represent these interests. Most typically, this is NOT the case today.
- Actually, FPTP Parliaments typically originated from the appointment of a Chamber of *contributors* facing a taxing authority.

# Assessment of majority/plurality, 2

- Majority/plurality and proportionality correspond to two basically different notions of representativeness.
- M/P elects a Chamber of delegates of (supposedly homogeneous) clusters of LOCAL, small-numbered interests/opinions;
- Proportionality elects a scaled assembly of the citizens, where each cluster of (typically nation-wide) interests/opinions are represented with the share it enjoys in the “real” assembly.
- What above is of utmost relevance. *M/P and PR are not two alternative techniques. They incorporate a basically different notion of democracy.*

# But...

- As we said, we cannot conclude that PR is better. It may imply flaws such that the “microcosm” notion of Parliament may prove unviable.
- In other terms, despite its being less democratic M/P may result being an optimal second best choice.
- For instance, the *unanimity* rule satisfies anyone with the choice – but cannot work.
- So we must move now to the assessment of PR.

# Defects of proportionality, introduction

- Our problem may be stated this way: *the PR is preferable, unless it is flawed by major pitfalls.*
- According to literature (and commonsense) proportionality *may* have three major pitfalls
  1. It makes it difficult to govern, because there are too many deciders (the majority coalition parties), while in majority/plurality usually there is only one ruling party.
  2. The supposed proportionality may be false, as the *distribution of power* may be unfair. In particular, small centrist parties will enjoy a undeserved blackmailing power.
  3. PR forces the voters to choose for abstract entities –the parties- instead that for a person, like in majority; being persons, under majority the candidates must be honest, expert, wise, etc. No one will vote for Al Capone.

# Defects of proportionality, 1

*PR forces the voters to choose for abstract entities –the parties- instead that for a person, like in majority; being persons, under majority the candidates must be honest, expert, wise, etc. No one will vote for Al Capone.*

- What above is simply false. No-one would vote for Al Capone, but many voted for Berlusconi and his cronies in plurality.
- There are good reasons for that. To win a FPTP election is costly. A candidate is unlikely to win unless s/he is supported by some lobbying. Also, the winner may easily be a “TV nice face” instead of an obscure yet capable technician.
- Also, supposing that people will not vote for Al Capone, why should they vote for his list under PR?

# Defects of proportionality, 1 (cont.)

- Persson, Tabellini and Trebbi (2003) found a weak but significant relation between proportionality and the *Perception of corruption*. To move from a purely majoritarian to a fully proportional representation would increase the perception of corruption by some 15%.
- Their research is dubious –at best, as usual in cross-many-countries analysis.
- Their main limit is not to have run *regional* regressions. If f.i. we consider only Western European countries, the two M/P ones, Britain and France, rank respectively 10° and 13° out of 16.
- Also, PTT found a correlation of 0.17 between corruption and their indicator of proportionality; for the 29 European countries of their sample,  $r$  is -0.25 (albeit not significant).
- According to a recent empirical study (Tavares, 2007), “More corrupt countries are more likely to adopt a plurality system than less corrupted ones.”



# Defects of proportionality, 2

*It makes it difficult to govern, because there are too many decisors (the majority coalition parties), while in majority/plurality usually there is only one ruling party.*

Is it true that under M/P there are less deciders? No. The real deciders are the same as under PR, that is the interest groups (both legitimate and not) that are present in the society and represented by the winning party or by the winning coalition.

The real difference is that under M/P these groups appear as *factions* within the parties and not as full parties.

Hence, the real difference is that the contracting among interest groups is made *within* the party, outside the sight of the voters.

# Defects of proportionality, 2 (cont.)

- Hence, the real (supposed) advantage of M/P is not that there are less deciders, but that the *contracting costs among deciders* are supposedly smaller, because the constraint of the public opinion is less cogent.
- Obviously, this entails a strong price in terms of **loss of democracy**.
- Less obviously, contracting costs may be high, and even higher than under PR. The reason is that the choice set of the deciders is less constrained (a party in PR cannot suggest paying a tribute to the Mafia in exchange of, say, a public work in a given area; a faction in P/M can, as this request will not surface).
- Lijphart (1999), on the basis of a sound empirical analysis, writes: “majority democracies are clearly *not superior* to consensual ones in what concerns the management of the economy and the avoiding of social unrest”.

# Defects of proportionality, 2 (cont.): The role of factions

- An index of governability for system  $i$  was defined:  $G_i = (S/N)(N/P)^a$  Where

$S$  = seats of governing coalition

$N$  = number of parties of the governing coalition

$P$  = number of parties under PR if the preferences of the voters are the same and the governing coalition includes all the parties of the G.C. in  $i$

$0 \leq a \leq 1$

If  $a=0$ , the index collapses to  $S/N$ ; if  $a = 1$  to  $S/P$

Hence the role of factions increases with  $a$ .

# Continuation of the continuation

- Simulation with (stylized) data for Germany provided this result: *if the role of factions is such that under FPTP it reduces the governability of more than 30.2% with respect to the case of monolytic parties, than the governability of FPTP is lower than that of PR with a 3% threshold.*
- *Migheli and Ortona, 2011. See references for details.*

# Defects of proportionality, 3.1

- *The supposed proportionality may be false, as the distribution of power may be unfair. In particular, small centrist parties will enjoy a undeserved blackmailing power.*
- This is probably **the most important critique**, and it is widely accepted by politicians, public opinion...
- And scholars (IDEA 2005): "[under proportional representation] tiny minority parties [can] hold larger parties to ransom in coalition negotiations. [...] Small parties get a disproportionately large amount of power. Large parties may be forced to form coalitions with much smaller parties, giving a party that has the support of only a small percentage of the votes the power to veto any proposal that comes from the larger parties".

# Defects of proportionality, 3.1 (cont.)

- The rationale is obvious – suppose a Parliament with three parties, with 49%, 2% and 49% of power. The middle party has an enormous blackmailing power.
- But what above is theoretically wrong. Can you see why?

# Defects of proportionality, 3.1 (cont.)

- Because if the middle party enjoys a power rent, other small centrist parties will be produced by gemmation from the large ones, *until the rent is fully dissipated.*
- What above has been argued by McGann *et al.* In 2009, who also found empirical evidence to support it.

# Interlude: the mystery of MWCs, 1

- It is often assumed, apparently plausibly, that governing coalitions will be made of MWCs.
- Under PR this typically is *not* the case.
- The reason may reasonably be that large parties summon many small ones to avoid an excess of power of the small centrist parties.



# The mystery of MWCs,2

- For instance, after the PR elections in Italy in 1983 the governing coalition was made of 5 parties, DC (225 seats), PSI (73), PLI (16), PRI (29) and PSDI (23).
- The requested majority was 315 – each of the last three parties was superfluous. This made their power quite limited.

# Defects of proportionality, 3.2

- In a recent empirical research (Migheli, Ortona and Ponzano, 2012) a new realistic index of power is employed. According to it,
  - Only *contiguous* winning coalitions are admitted;
  - The power of a party in a winning coalition depends both from being a party crucial or not and its share of seats;
  - The overall power of a party depends from the sum of its power across the coalitions.
- Simulation under different proportional electoral rules and different stylized real-world cases provides a quite clear result:
- With respect to the share of votes, *the power is redistributed from the extreme parties to the centrist ones, but among the centrist ones the most favoured are the large parties and not the small ones.* (By the way, this confirms McGann et al.)

# Defects of proportionality, 3.2 (cont.)

- A corollary of what above is that a limitation of proportionality (like a threshold) is ineffective in reducing the blackmailing power of small centrist parties.
- Actually, it may *improve* such power, because it creates a barrier to entry.
- Both McGann et al and Migheli et al found empirical support to this result.



# An objection to the previous objection to an objection to proportionality

- There is a possible and sensible objection to Migheli, Ortona and Ponzano.
- The small centrist parties may have a *second order power*, because if they leave the majority coalition the remaining small parties will obtain a blackmailing power.
- Arguably, this SOP is less relevant than a first order one – but this problem has not yet been studied.

# Majority/Plurality vs Proportionality: conclusion, 1

- So we should conclude that PR is preferable. If things are so, we should also expect PR to be more appreciated by scholars and more widespread across democracies.
- Let's see...

# Majority/Plurality vs Proportionality: conclusion, 2: what the experts say

- Lijphart (1994, p.8): “The overall conclusion must be that conventional wisdom is wrong in positing a trade-off between the advantages of plurality and PR. The superior performance of PR with regard to political representation is not counterbalanced by an inferior record on governmental effectiveness”.
- Farrell (2001, p.205): “The supposed trade-off between the proportionality of an electoral system and measures of governmental or system stability appears conspicuous by its absence”.
- Bowler et al. (2005): 73% of interviewed political scientists claimed that the best electoral system is a modified PR (with a plurality for the German system), against a 25.5% for M/P.

# Majority/Plurality vs Proportionality: conclusion, 3: what peoples do

- According to IDEA, in 2005 72 countries or territories adopted PR and 91 M/P (and 40 other or mixed systems).
- But overall data are obscured by the strong presence of M/P in 58 former British colonies.
- In Europe, 36 Parliaments are elected through PR, 6 through M/P and 5 through mixed or other systems.
- 13 European new democracies adopted PR, 4 adopted a mixed/other system and 1 M/P.



# The simulation of electoral systems, 1

- Traditionally, the problem of the choice between M/P and PR has been seen as one of a *trade off* between the superior efficiency (“governability”) of M/P and the superior proportionality (“representativeness”) of PR.
- We saw that this approach is obsolete.
- But how can we *measure* G and R of an electoral system?
- As for G, if we accept the common wisdom a good indicator could be the ratio  $S/N$ , where S is the *share of seats* of the governing coalition and N is the *number of parties* belonging to it; possibly, as we saw, corrected to allow for the role of factions.
- As for proportionality, there are many indicators in the literature. The most employed is probably the *index of Gallagher*, G. It is based on the difference between the *share of votes* and the *share of seats*.
- As such, G is substantially useless for the comparison of M/P and PR. Can you see why?

# The simulation of electoral systems, 2

- Because in all systems but a *perfect* proportionality the votes *do not correspond* to the preference of voters, and this bias is system-specific (and greater under M/P).
- An index of representativeness should assess it with respect to the representativeness under perfect proportionality, *given the same preferences of the voters*.
- This may be accomplished through *simulation*.
- Actually, *no subject of social sciences is more suitable of being studied through simulation than the comparison of electoral systems*.
- Can you see why?

# The simulation of electoral systems, 3

- Hence, you are warmly invited to the presentation of the program ALEX4.2 for the simulation of electoral systems, this afternoon!

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