Patterns of Intra-Party Competition in Open-List & SNTV Systems

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Most research on electoral systems concerns the “inter-party dimension”
- number of parties, proportionality, etc.

The “intra-party dimension of representation” is less understood
- Candidate vote totals within party
- Relations between individual legislators and their party leaders, and also relations with voters
- Characteristics of candidates and legislators under different electoral rules
In this paper we are concerned with questions related to votes earned by individual winning candidates, as a share of their parties’ votes in a district.

Electoral systems that use non-transferable preference votes:
- SNTV--where such votes are the only votes used
- OLPR--where such votes affect intra-party order, after seats allocated proportionally at party level
RESEARCH QUESTIONS

- Interest in impact of electoral system design on candidate vote shares
  - SNTV vs. OLPR
  - District magnitude
RESEARCH QUESTIONS

- Is there a systematic relationship between the district magnitude and the intra-party preference-vote shares of candidates?
- If so, does it vary according to allocation formula (SNTV vs. OLPR)?
- And can we estimate the shape of this relationship using "logical models" (as advocated by Taagepera, 2008)?
WHY IT MATTERS

Both SNTV and OLPR are predicated on the assumption that voters should have “personal” representation.

And that voters are not indifferent among candidates nominated by their party (assuming the party nominates more than one).

As well as on giving voters choices both among parties and among candidates (inter- and intra-party).
WHY IT MATTERS

- Recent survey of experts:
  - OLPR is the third most preferred electoral system among electoral-system experts*
  - Yet country-specific literature is divided on OLPR
  - Experts on electoral systems rank SNTV as the worst system, and country specialists seem to share the skepticism
  - Yet the two systems have much in common, specifically their use of non-transferable preference votes

*Bowler, Farrell, Pettit (2005)
WHY IT MATTERS

- The incentives of each system imply tradeoffs in terms of how “representative” the system is at the intra-party level, as well as in how many votes tend to be “wasted” on either the inter-party or intra-party dimension.

- These tradeoffs differ by electoral system used (SNTV or OLPR) and district magnitude.

- Implications for electoral system design:
  - Maybe there is “sweet spot” on the intra-party dimension.
  - Maybe OLPR could be improved by taking some lessons from the SNTV playbook!
APPROACH


- Logical models
  - “How should two or more quantities be related?”

- Symmetric regression to test logical models
  - Unlike standard regression (one-way) equations, symmetric regression generates equations that are transitive and reversible
THEORY

- Balance of individual and collective incentives
  - Individual candidates--vote maximizers
  - Collective parties--seat maximizers
- SNTV provides parties with collective incentive to find a way to manage their internal competition
- OLPR encourages parties to permit laissez faire competition among their candidates
SNTV VS. OLPR

- Critical difference is in one “mechanical” feature of the system: the presence or absence of vote pooling
- OLPR--vote pooling on inter-party dimension: party wins seats via applying PR formula to its collective vote share
- OLPR--candidates with top s vote totals within party win seats
- SNTV: party wins as many seats as it has candidates with top M vote totals (M= number of seats available in district)
SNTV VS. OLPR

- Collective and individual incentives are well aligned under OLPR
  - Any votes won by a candidate accrue to the list and may increase its collective seat total

- Collective and individual incentives are in tension under SNTV
  - Each candidate wants more votes --> electoral security
  - Party needs votes to be optimally distributed among candidates...
SNTV VS. OLPR

- More votes for an already “safe” candidate under SNTV are not an asset for collective seat maximization -- in contrast to OLPR

- More votes for “hopeless” candidates are also not an asset under SNTV -- in contrast to OLPR

- Thus under SNTV, there is a collective incentive to intervene in internal competition and push votes of both secure and hopeless candidates towards marginals
SNTV VS. OLPR

- Intervention in internal competition under SNTV may also take the form of restricting the number of candidates in the first place.

- So expect fewer than \( M \) candidates (\( c < M \)).
  - In contrast to OLPR: \( c \geq M \).

- Even for a given \( c \), we still expect the party to aim for vote equalization.
  - In contrast to OLPR: vote maximization.
QUANTITY OF INTEREST

- Preference vote shares \((P)\)
  - votes of candidate divided by votes of party/ alliance
- Could be estimated for any candidate, but here principal interest in two:
  - first winner \((P_1)\)
  - last winner \((P_s)\)
For a given number of candidates, what “should be” the share of votes received by the first winner?
For a given number of candidates, what “should be” the share of votes received by the first winner?

Method of bounds (Taagepera):

- If all votes are concentrated on first winner, $P_1=1.0$
  - $P_1=c^0=1$ (upper bound)
- If all candidates have equal vote shares, $P_1=1/c$
  - $P_1=c^{-1}=1/c$ (lower bound)
LOGICAL MODELS

- Take the mean of these extremes to arrive at logical estimate:

\[ P_1 = c^0 = 1 \quad \text{and} \quad P_1 = c^{-1} = 1/c \]

\[ P_1 = c^{-\frac{1}{2}} \]

- That is, the share of the first winner’s vote should be approximately the inverse square root of the number of candidates running for the party in the district.
LOGICAL MODELS

- The logic here--taking the mean of boundary conditions--implies no intervention in the competition.
- That is, OLPR.
- So what if SNTV?
If we have $P_1 = c^{-0.5}$ for OLPR...

And we expect parties under SNTV to intervene to push first candidate’s votes downward

Then first candidate’s share under SNTV ($P'_1$) might be midpoint between $P_1 = c^{-0.5}$ and lower limit of $P_1 = c^{-1} = 1/c$

So, let’s try $P'_1 = c^{-0.75}$
DATA

- OLPR (n=762)
  - Brazil, Chile, Colombia (2006), Finland, Poland
- SNTV (n=1271)
  - Colombia (2002), Japan, Taiwan, Vanuatu
Symmetric non-constant regressions*

- one way: \( P_1 = c^{-.454} \)

- other way: \( c = P_1^{1.981} \Rightarrow P_1 = c^{(1/-1.981)} = c^{-.505} \)

- symmetric exponent is geometric mean of the one-way exponents on \( c \) (matching sign): \( P_1 = c^{-.479} \)

* When \( c=1 \), it must be that \( P_1=1 \)
TESTING THE FIRST MODELS: SNTV

- Symmetric non-constant regressions
  - one way: $P_1 = c^{-0.724}$
  - other way: $c = P_1^{-1.284} \Rightarrow P_1 = c^{(1/1.284)} = c^{-0.779}$
  - symmetric exponent is geometric mean of the one-way exponents on $c$ (matching sign): $P_1 = c^{-0.751}$
Figure 1. Relationship of the first winner’s share of preference votes to the number of candidates run by the party

OLPR

\[ \log P_1 = -0.453 \log c \quad (0.008) \]
\[ \log c = -1.981 \log P_1 \quad (0.026) \]

762 obs; 213 clusters

(robust standard error in parentheses)

SNTV

\[ \log P_1' = -0.724 \log c \quad (0.027) \]
\[ \log c = -1.284 \log P_1 \quad (0.024) \]

1,271 obs; 453 clusters

(robust standard error in parentheses)
We saw that OLPR and SNTV differ, as expected, on the relationship of first winner’s share and the number of candidates.

This is consistent with the expected intervention by parties under SNTV, but laissez faire under OLPR for a given number of candidates.

But we posited earlier that another form of intervention would be in restricting the number of candidates (under SNTV).
OLPR expect at least M candidates (c\geq M)
- symmetric regression exponent near 1.0 (actually 1.1)

SNTV expect fewer than M candidates (c<M)
- method of bounds again: minimum possible exponent is c'=M^0 (party contests with 1 candidate), and plausible upper limit is c'=M^1 \rightarrow so might expect c'=M^{0.5}
- symmetric regression exponent is .49

This is for all parties; yet over half have just c=1; for all those with c>1 \rightarrow logical c'=M^{0.75} / empirical c'=M^{0.7}
Figure 2. Relationship of number of candidates run by a party and the district magnitude

\[ c = M^{1.1} \]
\[ c' = M^{0.49} \text{ (all)} \]
\[ c' = M^{0.7} \text{ (if } c > 1) \]

OLPR
\[
\begin{align*}
\log c &= 1.084 \log M \ (0.014) \\
\log M &= 0.901 \log c \ (0.011)
\end{align*}
\]
761 obs; 213 clusters

SNTV, all parties
\[
\begin{align*}
\log c &= 0.327 \log M \ (0.012) \\
\log M &= 1.34 \log c \ (0.031)
\end{align*}
\]
1,271 obs; 453 clusters

SNTV, if \( c > 1 \) when \( M > 1 \)
\[
\begin{align*}
\log c &= 0.654 \log M \ (0.010) \\
\log M &= 1.34 \log c \ (0.031)
\end{align*}
\]
543 obs; 360 clusters
MODELS FOR M

- Following the principles of logical modeling and symmetric regression, we should be able to substitute the known relationship of \( c \) to \( M \) into the equation for \( P_1 \) as a function of \( c \)...

- OLPR, using the logical models
  - \( P_1 =c^{-0.5} \) and \( c=M \)  --->  \( P_1 =M^{-0.5} \)

- OLPR, using the symmetric regressions
  - \( P_1 =c^{-0.479} \) and \( c=M^{1.1} \)  --->  \( P_1 =M^{-0.527} \)
MODELS FOR M

- SNTV, using the logical models
  - $P_1 = c - 0.75$ and $c = M^{0.5}$ --- $P_1 = M^{-0.375}$

- SNTV, using the symmetric regressions
  - $P_1 = c - 0.76$ and $c = M^{0.49}$ --- $P_1 = M^{-0.37}$

- Ignoring one-candidate parties
  - $P_1 = c - 0.75$ and $c = M^{0.7}$ --- $P_1 = M^{-0.525}$
Figure 3. Relationship of the first winner’s share of preference votes to district magnitude

OLPR

\[
\log P_1 = -0.494 \log M \quad (0.009)
\]

\[
\log M = -1.79 \log P_1 \quad (0.027)
\]

761 obs; 213 clusters

SNTV, All parties

\[
\log P_1 = -0.241 \log M \quad (0.010)
\]

\[
\log M = -1.76 \log P_1 \quad (0.027)
\]

1,271 obs; 453 clusters

SNTV, if c>1 when M>1

\[
\log P_1 = -0.482 \log M \quad (0.017)
\]

\[
\log M = -1.76 \log P_1' \quad (0.027)
\]

543 obs; 360 clusters

OLPR exponent: \(-0.525\)

SNTV exponent: \(-0.37\) (all parties)
WHAT IF NOT SYMMETRIC?

- Take as an example the SNTV regressions, and assume we run them only one-way rather than symmetrically.
  - $P_1 = c^{-.72}$ (close enough to expected $P_1 = c^{-.75}$ to accept)
  - $c = M^{.33}$ (rather far from logical model $c = M^{.5}$)
  - Plug one into the other and get $P_1 = (M^{.33})^{-.72} = M^{-.24}$; one-way regression would have “confirmed”; yet quite far from the expectation derived from the two logical models ($P_1 = M^{-.375}$)
We can model SNTV logically, as follows

As said earlier, parties under SNTV have a strong collective incentive to manage their competition so as to restrict votes being won by their first candidate (which we already saw in the model for the first winner, and in comparison to OLPR)

They also have incentive to avoid votes being overly dispersed; not too many votes wasted on trailing candidates

To the extent that they approximate this---\( P_s = c^{-1} \)

More precisely, we might take the known average value of \( P_1 = c^{-0.75} \), and stipulate that parties would tend to equalize across all remaining candidates: \( P_s = (1 - P_1) / (c - 1) \).
LAST WINNER IN SNTV

- We find $P'_{s} = c^{-0.96}$ (remarkably close!)
LAST WINNER IN SNTV

- We can then extend to M:

  - \( P'_s = (M^{.5})^{-.96} = M^{-.48} \); in other words, the last winner under SNTV has about the same preference vote share as the first winner under OLPR, for a given district magnitude.

- If restricted to parties that have \( c > 1 \):

  - \( P'_s = (M^{.7})^{-.96} = M^{-.67} \); still falling off faster with \( M \) than is the case for OLPR (\( P_s = M^{-.5} \)).
LAST WINNER IN OLPR

- Not clear how to establish logical basis (difficult because, with many candidates and no collective penalty for excessive fragmentation, last winner could have very small preference-vote share)

- However, \( P_s \) should be in between what we found for first winner (in OLPR: \( P_s = M^{-0.5} \)) and what we found for SNTV last winner (\( P_s = M^{-1} \))
  - So logically expect around \( M^{-0.75} \)
  - Empirically we find \( M^{-0.7} \)
ASSESSMENT OF MODELS

- We started with very (maybe “too”) simple assumptions, using the method of bounds.

- It might not have worked, but the empirical pattern is very close to the logical models.

- Confirming expected greater intervention of parties in their internal competition --> first winner’s share tends to be lower under SNTV than under OLPR, for a given number of candidates, but higher for a given district magnitude*

- same pattern holds for last winner

*using the all parties models for SNTV
Most of the “action” is found in the impact of the electoral system, and its (mis)alignment of collective (party) and individual (candidate) incentives on the number of candidates nominated ($c$)

<table>
<thead>
<tr>
<th></th>
<th>OLPR</th>
<th>SNTV (all)</th>
<th>SNTV (if $c&gt;1$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First winner ($P_1$)</td>
<td>$c^{-0.5}$</td>
<td>$c^{-0.75}$</td>
<td>$c^{-0.75}$</td>
</tr>
<tr>
<td></td>
<td>$M^{-0.5}$</td>
<td>$M^{-0.375}$</td>
<td>$M^{-0.525}$</td>
</tr>
<tr>
<td>Last winner ($P_s$)</td>
<td>$c^{-0.7}$</td>
<td>$c^{-1}$</td>
<td>$c^{-1}$</td>
</tr>
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<td>$M^{-0.7}$</td>
<td>$M^{-0.5}$</td>
<td>$M^{-0.67}$</td>
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</tbody>
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FURTHER APPLICATIONS

- **Electoral reform**: District magnitude

- Find a “sweet spot” for OLPR where intra-party competition is neither too dominated by leading candidate nor overly fragmented due to many “hopeless” candidates
  - Moderate magnitude range (about 5–8)
FURTHER APPLICATIONS

- **Electoral reform:** Allocation formula
  - If we want to minimize votes wasted on the inter-party dimension, OLPR is “better”
  - But if we want to minimize votes wasted on the intra-party dimension, SNTV is “better”

- Improve OLPR by incorporating SNTV elements?
  - Legal restriction on candidates, $c<M$, perhaps $c=M^{0.825}$
  - Intra-party threshold?
FURTHER APPLICATIONS

- Models could be refined by including **number of seats**; obviously it is a key factor in accounting for candidate vote shares
  - However, it does not provide much useful information for system design, as we can engineer the number of seats per party only indirectly--through adjusting $M$ or thresholds
- Potentially more interesting: How the mix of **candidate characteristics** affects individuals’ preference vote shares
  - Note that the mix of candidates is itself a factor in shaping the number of seats a party wins
FURTHER IMPLICATIONS

Example from Brazil 2002 (OLPR with M range 8–70)

Career backgrounds of candidates should affect the ranks candidates obtain within their list

- Incumbents: wide appeal
- State legislators: middling appeal
- Municipal councilors: narrower appeal

The wider the appeal, the more likely to be near the top of the list, or if losing, likely to be close loser.
I still have many more questions than answers

But now time for your questions!