

Content-based Agendas and Qualified Majorities in Sequential Voting

Andreas Kleiner and Benny Moldovanu

Arizona State University, Bonn University

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Introduction

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- ▶ Economic theory: Direct mechanisms, plurality voting, . . .
- ▶ Practice: Sequential voting procedures are very common

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Questions

- ▶ Which sequential voting procedures do have desirable properties?
- ▶ Can we explain voting behavior that is observed in practice?

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Regulation of stem cell research in Germany:

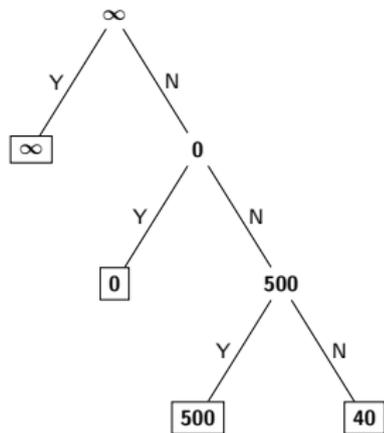
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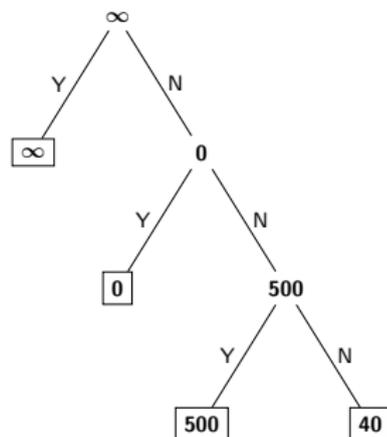
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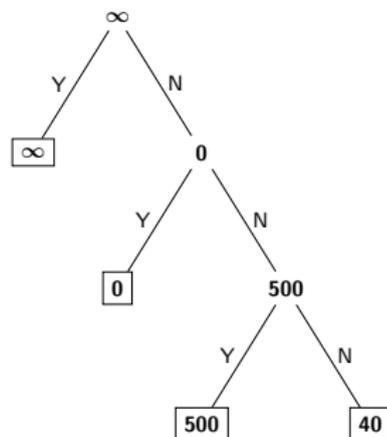
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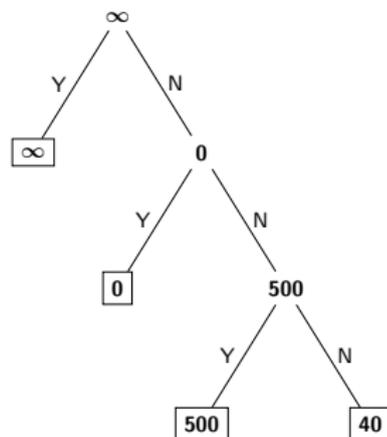


Only 4 voting profiles consistent with sincere voting:

	Peak on 0	Peak on 40	Peak on 500	Peak on ∞	Other
Profile	N, Y, N	N, N, N	N, N, Y	Y, N, Y	

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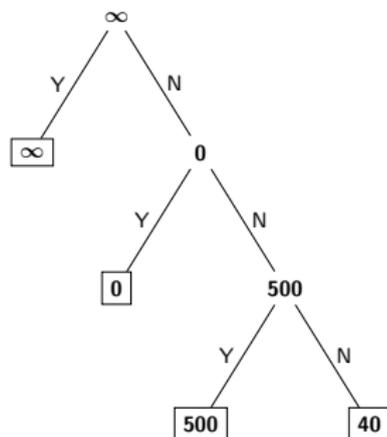


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The elected proposal **500** is the corresponding Condorcet winner

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SQ Women's benefits defined by their husband's contribution (status quo)

MR A moderate reform

RR A radical reform: individual pension contributions and benefits.

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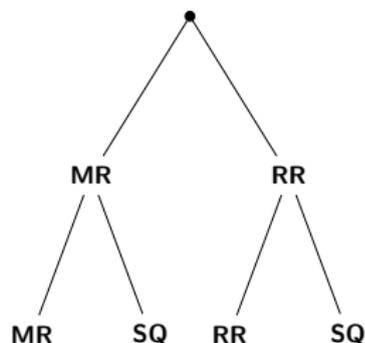
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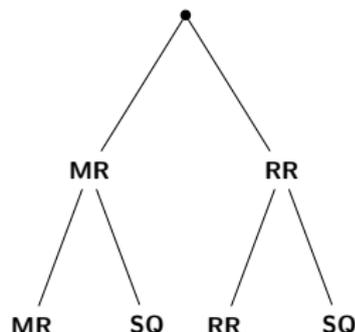
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Introduction: Example of amendment procedure

Preferences (Senti, 1998):

- ▶ Conservative party (18 legislators):
SQ \succ **MR** \succ **RR**
- ▶ Moderate parties (21 legislators):
MR \succ **SQ** \succ **RR** or **MR** \succ **RR** \succ **SQ**
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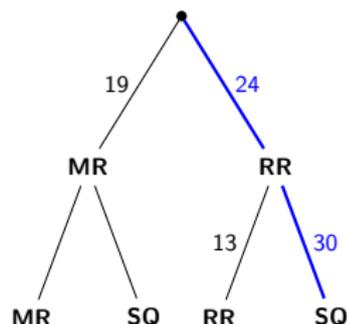


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MR is the Condorcet winner,
but it was rejected in the first vote!

Introduction: Approach

We analyze ...

- ▶ **sequential voting** schemes in settings where several
- ▶ **privately informed** agents have
- ▶ **single-peaked preferences** on a finite set of alternatives.

Introduction: Complete versus Incomplete Information

Long tradition of game-theoretic analyses of voting trees under complete information Farquharson, 1969

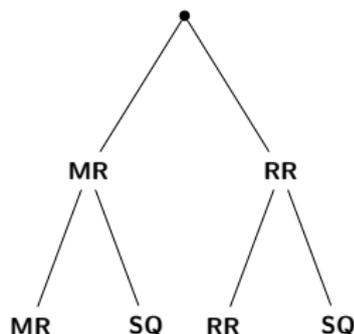
Complete information: Condorcet winner is elected in sophisticated equilibrium Miller, 1977; McKelvey and Niemi, 1978; Moulin, 1979

Incomplete information: Condorcet winner need not be elected in equilibrium Ordeshook and Palfrey, 1988

Introduction: Example of amendment procedure

Preferences:

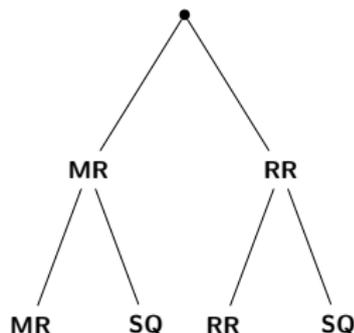
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Perfect Bayesian equilibrium:

Moderates and left-leaning parties vote sincerely, conservatives manipulate.

Model: Voting trees

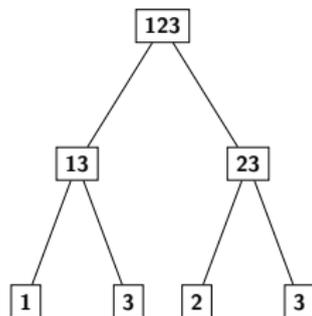
- ▶ Set of alternatives: $A = \{1, \dots, |A|\}$
- ▶ Set of voters: $\{1, \dots, N\}$
- ▶ Each voter has strict and single-peaked preferences:
 $a < b < c$ and $a \succ b$ imply $b \succ c$,
 $a < b < c$ and $c \succ b$ imply $b \succ a$
- ▶ Incomplete information about others' preferences

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Voting tree:

- ▶ Binary tree
- ▶ Each node is associated with a subset of alternatives
- ▶ Simple majority required at each node



Model: Equilibrium

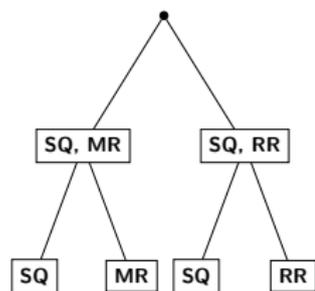
Ex-post perfect equilibrium:

For every non-terminal node, and following any history, play a best response for every realization of preferences.

Sincere voting:

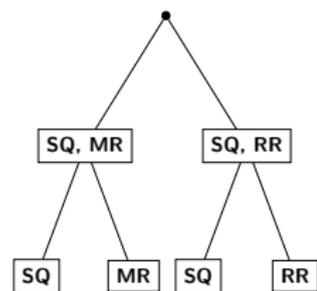
Vote for the set that contains the most preferred alternative. If it is contained in both sets, vote for the set that contains the second-most preferred alternative, and so on.

Model: Convexity

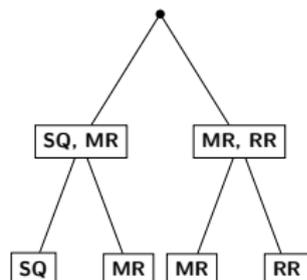


Sincere voting is not
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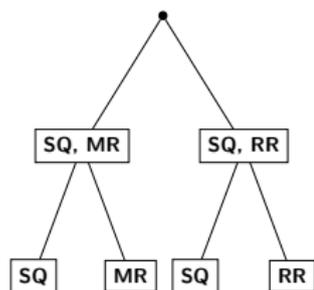
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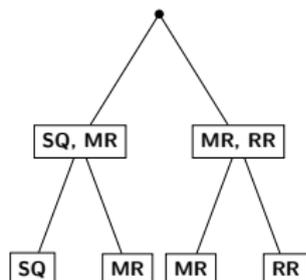
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Model: Convexity



Sincere voting is not an ex-post equilibrium!



Definition

A voting tree is **convex** (CONV) if, whenever a and c are associated with a node, any b such that $a < b < c$ is also associated with this node.

Results

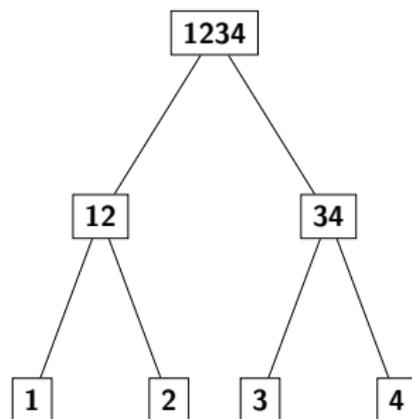
Theorem

Consider a voting tree satisfying CONV. Then sincere voting is an ex-post perfect equilibrium and the Condorcet winner is always selected.

- ▶ Robustness to coalitional deviations.
- ▶ Convexity is also necessary for sincere voting to be an EPPE.

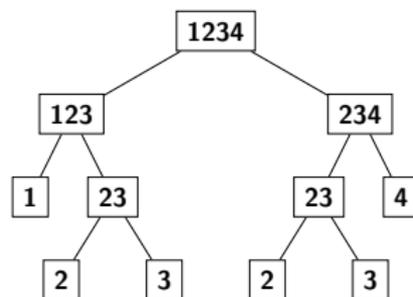
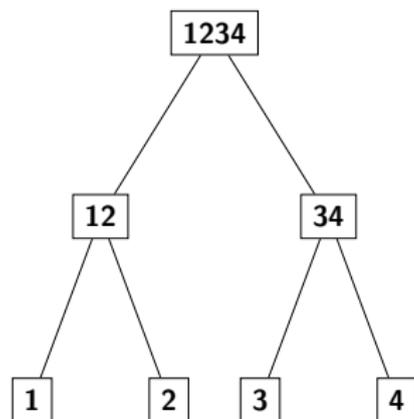
Results: Intuition

- ▶ Determinants of optimality are *pivotality* events
- ▶ CONV finely tunes the inference in these events: a pivotal agent infers that he has some control over future decisions



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Model: Convexity

Examples of convex voting trees:

Amendment procedure: is convex if contests are among the extreme alternatives. First vote among 1 and $|A|$. If 1 wins, the next vote is among 1 and $|A| - 1$, otherwise among 2 and $|A|$, and so on.

Successive procedure: is convex if the order of proposals is, for example, $1, 2, \dots, |A|$, or $1, |A|, 2, |A| - 1, \dots$

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Results: What about equilibrium uniqueness?

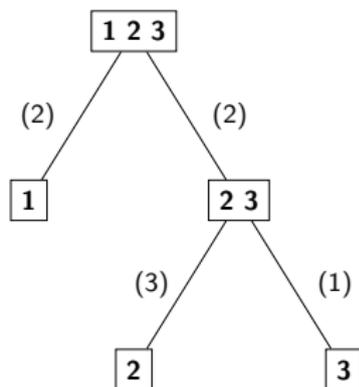
Responsive strategy: For any node and any history, there is a preference such that the strategy prescribes a left (right) vote.

For partitional procedures, sincere voting is the unique ex-post perfect equilibrium in responsive strategies.

In general, all responsive ex-post perfect equilibria are outcome-equivalent.

Results: Are binary trees restrictive?

Allow for qualified majorities:



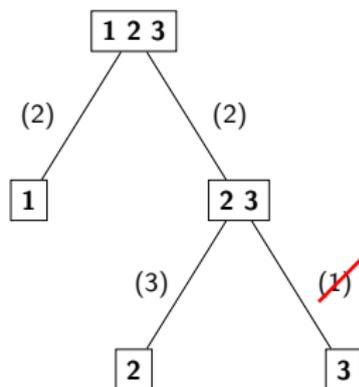
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A voting procedure is **monotone** (MON) if

$\tau^\ell(v) \geq \tau^\ell(u)$ holds whenever
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 $\min L(v \oplus r) \leq \min L(u \oplus r)$.

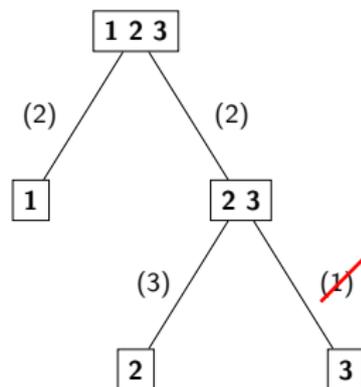


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Theorem

If a voting procedure satisfies CONV and MON, then sincere voting is an ex-post perfect equilibrium.

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Theorem (Moulin, 1980)

Assume preferences are single-peaked. Then any unanimous, anonymous, and dominant-strategy incentive compatible social choice function is a generalized median.

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Theorem

*Fix **any** voting tree satisfying CONV and **any** scf f that is unanimous, anonymous, and ex-post incentive compatible. Then there exists a system of majority thresholds τ such that the resulting voting procedure satisfies MON and implements f in a sincere, ex-post perfect equilibrium.*

Application: Examples of Qualified Majorities

- ▶ Super-majorities required for constitutional amendments (popular choices are 60%, 66% and 75%)

- ▶ Taxes and Expenditure laws (TELEs) in US states

For example, the legislature of Nebraska can vote to increase property taxes reflecting changes in the CPI by simple majority, while larger increases up to 5% require a 3/4 majority. Increases above 5% require a referendum.

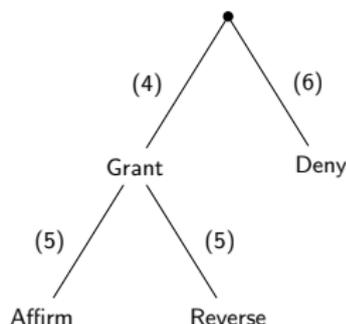
- ▶ US Supreme Court

Application: US Supreme Court

Most cases arise from petitions to review decisions of lower courts.

- ▶ First decision: *grant or deny the cert?*
- ▶ If a cert is granted: decision "on merits", to *affirm or reverse* the opinion of the lower court.

A decision on merits is binding and serves as precedent for all consecutive decisions in lower courts.

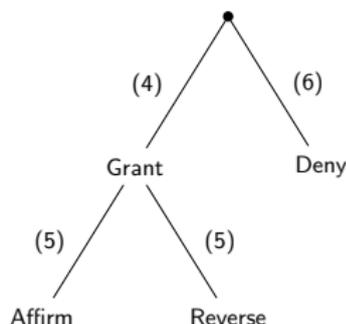


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Outcomes can often be ordered on liberal-conservative spectrum:

- (1) Affirm the decision
- (2) Deny the cert and keep the status quo
- (3) Reverse the decision

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Application: US Supreme Court

- ▶ The moderate alternative, to deny the cert, must be adopted or eliminated first.
- ▶ The procedure is **not convex**. The **monotonicity** of the thresholds is only apparent.
- ▶ Many cases of strategic behavior (Caldeira et al., 1999). In 1982 alone, the estimated Condorcet winner was not elected in 18 cases.
- ▶ *Defensive Denial*:
“In the normal case, this would be a pretty clear grant. Here, though, I would deny. [...] Because every abortion case on which cert is granted creates a new opportunity to overrule Roe, I would deny on defensive grounds. Tactical judgments aside, the case is a grant.” (Clerk to judge Marshall)

Conclusion: Many countries do use convex procedures

German parliament: Informal and formal rules

“If several proposals are made [...] then the first vote shall be on the farthest-reaching proposal. Decisive is the degree of deviation from status quo.” Article 30 (2) GO-BR

	Successive Voting	Amendment Procedure
Always Vote on Most Extreme Alternative	AT, DK, FR, DE, GR, HU, IS, IE, IT, NL, NO, PL, SI, ES, European Parliament	FI
Other procedural rule	BE, CR, LU, PT, SK	SE, CH, GB, (US)

Source: Rasch (2000)

From a practical perspective, convexity might be easier to satisfy for successive procedures!

Summary

- ▶ Analyze voting procedures commonly used in practice
- ▶ Describe broad class of procedures that yield robust and desirable results
- ▶ Give a rationale for content-based agendas (in contrast to agendas formed by procedural rules)
- ▶ Results explain observed voting behavior and illuminate the “sincere/sophisticated voting” debate in Political Science

