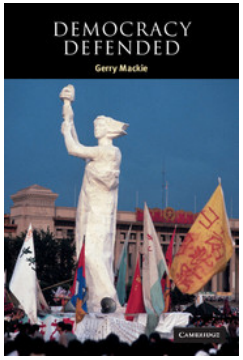
APPLICATION: INSTABILITY AT THE U.S. CONSTITUTIONAL CONVENTION

I. Introduction

1. If Plott (1967) and McKelvey (1976) are right, coalitions should be unstable and majority cycles should exist in "institution free" environments with multiple dimensions.
2. Empirically, however, coalitional instability and majority cycling rarely seem to exist (Mackie 2004).
3. Ballingrud and Dougherty find both in a case likely to have both: apportioning the national legislature at the U.S. Constitutional Convention.



I. Introduction

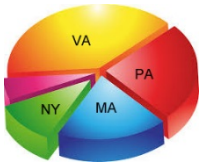
B. Research Questions

1. **Did the U.S. Constitutional Convention adopt a coalitionally-stable apportionment rule?**

   Not when it was adopted.

2. **Did majority cycles exist over those rules?**

   Yes.



   a. **Apportionment rule** – a rule which allocates legislative seats among the states.
      1) e.g. – divide seats according to the relative populations of each state.
   b. **Coalitional Stability** – an apportionment rule is coalitionally stable if it is in the core (i.e., there does not exist another apportionment rule that a majority of states prefer to it).

II. Background

A. Apportionment Rules Considered.

- Equal Representation (one state, one vote)

  Status quo under Articles of Confederation.

Unicameral Congress

Table 1: Apportionments Proposed at the Constitutional Convention

Label	Basis of Apportionment	Source
Co	quotas of contribution (taxes paid)	1: 35-6, 196-7, 204, 534
F	free population	1: 35-6, 196, 2: 220-3
E	equal representation	1: 196, 201-2, 445, 510
3f	free population & three-fifths slaves	1: 201, 586-97, 603-6
Pr	property	1: 469-70, 475
S	one senator for every 100,000 souls	1: 488-89
H1	one rep. for every 40,000 people	1: 523, 526, 540-42
5f	free population & five-fifths slaves	1: 580-81, 596
H2	one rep. for every 30,000 people	2: 638, 644

Status Quo → E

Final Outcome → 3f

These are all the principled methods of apportionment proposed at the Constitutional Convention (i.e., one's they took seriously). Four other rules appeared in delegate notes.

II. Background

B. Delegates voted on apportionments using the following rules.
   1. Each state had one vote.
   2. A majority of states determined the outcome of a vote.

NH MA CT NY NJ PA
DE MD VA NC SC GA

II. Background

B. Delegates voted on apportionments using the following rules.

1. Each state had one vote.
2. A majority of states determined the outcome of a vote.

Yeas: NH MA CT NY NJ PA
Nays: DE MD VA NC SC GA

...Yeas win.

II. Background

B. Delegates voted on apportionments using the following rules.

1. Each state had one vote.
2. A majority of states determined the outcome of a vote.
3. Each state's vote was determined by a majority of its delegates.

NH MA CT NY NJ PA
DE MD VA NC SC **GA**

II. Background

B. Delegates voted on apportionments using the following rules.

1. Each state had one vote.
2. A majority of states determined the outcome of a vote.
3. Each state's vote was determined by a majority of its delegates.

NH MA CT NY NJ PA
DE MD VA NC SC **GA**

II. Background

B. Delegates voted on apportionments using the following rules.

1. Each state had one vote.
2. A majority of states determined the outcome of a vote.
3. Each state's vote was determined by a majority of its delegates.
4. Anyone could propose.
5. Issues could be reconsidered.

III. Methods

Definition: dominance.

Apportionment rule A **dominates** apportionment rule B if a majority of states receive a greater vote share from A than from B.

Eleven States

state	Quota of Contribution (Co)	Free Inhabitants (F)
MA	0.213	0.156
CT	0.042	0.077
NY	0.151	0.105
NJ	0.008	0.057
PA	0.232	0.141
DE	0.022	0.016
MD	0.074	0.071
VA	0.206	0.149
NC	0.010	0.096
SC	0.015	0.047
GA	0.000	0.018

III. Methods

Definition: dominance.

Apportionment rule A **dominates** apportionment rule B if a majority of states receive a greater vote share from A than from B.

In this case six states prefer Co to F (a majority).

Hence, Co **dominates** F.

Eleven States

state	Quota of Contribution (Co)		Free Inhabitants (F)
MA	0.213	←	0.156
CT	0.042		0.077
NY	0.151	←	0.105
NJ	0.008		0.057
PA	0.232	←	0.141
DE	0.022	←	0.016
MD	0.074	←	0.071
VA	0.206	←	0.149
NC	0.010		0.096
SC	0.015		0.047
GA	0.000		0.018

III. Methods

Definition: dominance.

Apportionment rule A **dominates** apportionment rule B if a majority of states receive a greater vote share from A than from B.

And six states prefer F to 3f (a majority).

Hence, F **dominates** 3f.

Eleven States

state	Quota of Contribution (Co)	Free Inhabitants (F)	Three-Fifths Clause (3f)
MA	0.213	0.156 ←	0.137
CT	0.042	0.077 ←	0.068
NY	0.151	0.105 ←	0.096
NJ	0.008	0.057 ←	0.052
PA	0.232	0.141 ←	0.125
DE	0.022	0.016 ←	0.016
MD	0.074	0.071	0.080
VA	0.206	0.149	0.182
NC	0.010	0.096	0.102
SC	0.015	0.047	0.060
GA	0.000	0.018	0.021

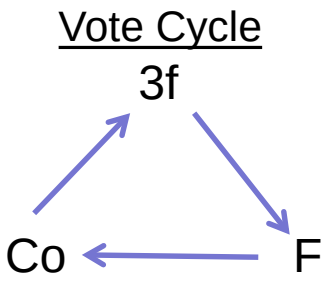
III. Methods

Definition: dominance.

Apportionment rule A **dominates** apportionment rule B if a majority of states receive a greater vote share from A than from B.

And six states prefer 3f to Co (a majority).

Hence, 3f **dominates** Co.



Eleven States

state	Quota of Contribution (Co)	Free Inhabitants (F)	Three-Fifths Clause (3f)
MA	0.213	0.156	0.137
CT	0.042	~~0.077~~	0.068
NY	0.151	0.105	0.096
NJ	0.008	~~0.057~~	0.052
PA	0.232	0.141	0.125
DE	0.022	0.016	0.016
MD	0.074	~~0.071~~	0.080
VA	0.206	0.149	0.182
NC	0.010	~~0.096~~	0.102
SC	0.015	~~0.047~~	0.060
GA	0.000	~~0.018~~	0.021

III. Methods

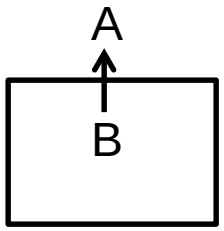
A. Calculate dominance relationships computationally, assuming:
   1. Delegates vote to maximize their state's share of the apportionment,
   2. Delegates use the same measures of vote shares.

III. Methods

Bicameralism is handled the same as unicameralism -- one chamber at a time.

Justification: if A dominates B, then

B is *not* coalitionally stable for a unicameral legislature.

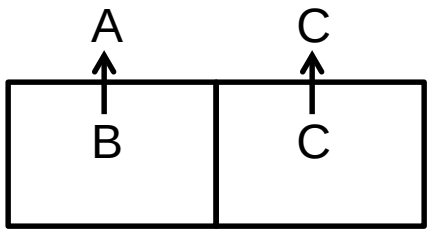


III. Methods

Bicameralism is handled the same as unicameralism -- one chamber at a time.

Justification: if A dominates B, then

(B,C) is *not* coalitionally stable for a bicameral legislature.

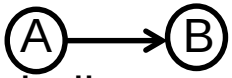


- *Note*: an apportionment that is not unicamerally stable cannot be part of a coalitionally-stable bicameral legislature.

IV. Results

Phase 1

Note: 9 apportionments in the study, but only 6 depicted.



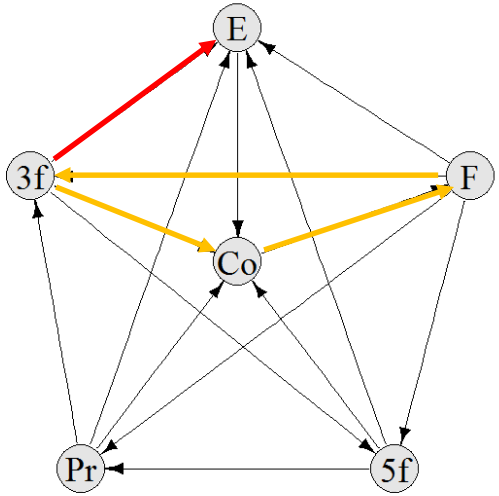
indicates A dominates B.

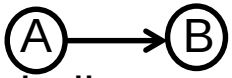
Phase 1 (Articles of Confederation, 13 states):
A strict order in which equal apportionment dominates all other apportionments proposed (E is Condorcet Winner).

IV. Results

Phase 1

Phase 2





indicates A dominates B.

Phase 2 (Constitutional Convention, 11 states):

1-No method of apportionment is coalitionally stable.

2-There are various cycles. Here's one…

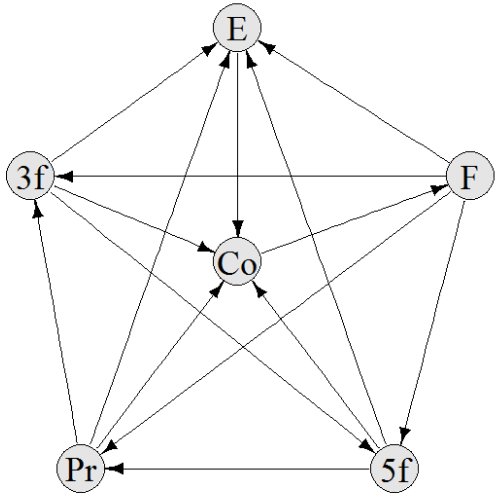
3- Three-Fifths clause proposed by Wilson (PA) in this environment.

- *Note*: South Carolina just proposed Co, which dominates F.

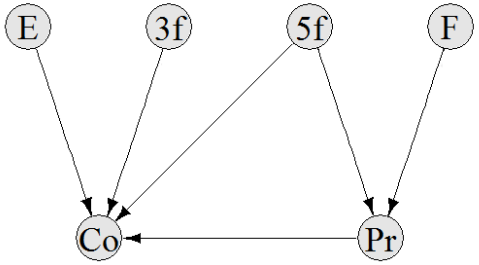
IV. Results

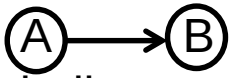
Phase 1

Phase 2



Phase 3





indicates A dominates B.

Phase 3 (Constitutional Convention, 10 states):

1-Several methods of apportionment are coalitionally stable.

Note: Three-Fifths Clause is one of them.

V. Conclusion

Sanford Levinson (University of Texas) argues that the three-fifths clause was *necessary*.

- This study suggests that the three-fifths clause was no more necessary than any rule of apportionment.

- The Three-Fifths clause was partly the result of historical contingency (i.e., which states participated), not necessity.

V. Discussion

1. What do you think?
2. What is the proper way of identifying majority cycles: looking at preferences or the outcome of votes?
3. In your opinion, why did Wilson (a delegate from Pennsylvania) propose the Three-Fifths Clause?