Pivotal Decision Maker, Agenda Power and Collective Responsibility Attribution

Conference in Political Science IAST 2018

Ray Duch, Sönke Ehret and Aki Matsuo

July 4, 2018

Centre for Experimental Social Science - CESS

Collective Decision Making?

- Group of decision-makers – for example....

  - parties in a governing coalition
  - Governors in the Federal Reserve Meeting
  - Board of Directors in a firm

- Those affected observe an outcome...

  - voters
  - investors
  - employees

- Which decision maker (DM) is held responsible?

  - Proposer
  - Voting weights
  - Largest party
  - Pivotal player

Duch, Przepiorka & Stevenson (2014)

- Recipients mainly attribute the responsibility to DMs with
  - agenda power or
  - largest vote share

- But little evidence of
  - veto/pivotal power "bonus"

Bartling, Fischbacher, and Schudy (2014)

- Responsibility attribution is associated with pivotal power

- Are there contexts where pivotality matters?

- Bartling et al (2014): In sequential voting settings, pivotality really matters

- Modified Duch et al (2014): What if agenda setting power is added to sequential voting?

Experimental Design: Bartling, Fischbacher, and Schudy (2014)

Collective dictator game

- 3 decision-makers, 3 recipients
- Simple majority decision-making with sequential voting
  - Set of options:
    (5,5,5,5,5,5) or (9,9,9,1,1,1)
- Decision-makers' voting is public knowledge
- Costly (but relatively cheap) punishment
  - Allocating 7 deduction points to decision makers by paying 1 point
- One-shot game, strategy method

Table from Bartling, Fischbacher, and Schudy (2014)

Allocation	Voting sequence	Average Punishment		
		Decision Maker		
		1	2	3
Unequal	u-u-u	*1.50*	**1.85**	0.86
	u-u-e	*1.86*	**1.92**	0.26
	u-e-u	*1.68*	0.07	**2.39**
	e-u-u	0.11	*1.83*	**2.33**
Equal	u-e-e	1.33	0.10	0.08
	e-u-e	0.17	1.43	0.08
	e-e-u	0.06	0.03	0.92
	e-e-e	0.08	0.07	0.03

bold: Pivotal for unequal outcomes
italic: First to vote for unequal outcomes

5

Replication of Bartling et al (2014)

Allocation	Voting sequence	Average Punishment		
		Decision Maker		
		1	2	3
Unequal	u-u-u	*1.07*	**0.59**	0.41
	u-u-e	*1.37*	**1.04**	0.07
	u-e-u	*1.26*	0.07	**1.19**
	e-u-u	0.11	*1.26*	**1.15**
Equal	u-e-e	0.93	0.00	0.00
	e-u-e	0.04	0.93	0.04
	e-e-u	0.04	0.04	1.15
	e-e-e	0.04	0.04	0.04

bold: Pivotal for unequal outcomes

italic: First to vote for unequal outcomes

6

Experimental Design: Modified Bartling et al with Proposer

Collective dictator game

- 3 decision-makers, 3 recipients
- Simple majority decision-making with sequential voting
- Randomly selected proposer
- Three choice options for proposer
    - (5,5,5,5,5,5) or (9,9,9,1,1,1)
    - (5,5,5,5,5,5) or (7,7,7,3,3,3)
    - (7,7,7,3,3,3) or (9,9,9,1,1,1)
- Decision-makers' voting is publicly available
- Costly (but relatively cheap) punishment
- One-shot game, strategy method

Modified Bartling et al: Decision Maker Punishment (1)

Proposal: ((9,1),(7,3))

Allocation	Voting sequence	Average Punishment		
		Decision Maker		
		1	2	3
Unequal	u-u-u	*0.52*	**0.67**	1.14
	u-u-e	*1.10*	**1.00**	0.57
	u-e-u	*0.67*	0.19	**1.48**
	e-u-u	0.14	*0.76*	**1.38**
Equal	u-e-e	1.90	0.19	0.43
	e-u-e	0.10	1.29	0.62
	e-e-u	0.10	0.19	1.71
	e-e-e	0.33	0.52	0.95

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcomes

Modified Bartling et al: Decision Maker Punishment (2)

Proposal: ((9,1),(5,5))

Allocation	Voting sequence	Average Punishment		
		Decision Maker		
		1	2	3
Unequal	u-u-u	*1.67*	**2.17**	0.83
	u-u-e	*1.50*	**2.67**	0.50
	u-e-u	*1.00*	0.00	**3.67**
	e-u-u	0.00	*1.17*	**3.50**
Equal	u-e-e	0.83	0.00	0.33
	e-u-e	0.00	1.67	0.33
	e-e-u	0.00	0.00	0.83
	e-e-e	0.00	0.00	0.00

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcomes

9

Modified Bartling et al: Decision Maker Punishment (3)

Proposal: ((7,3),(5,5))

Allocation	Voting sequence	Average Punishment		
		Decision Maker		
		1	2	3
Unequal	u-u-u	*1.33*	**1.33**	1.33
	u-u-e	*2.00*	**1.67**	0.67
	u-e-u	*2.00*	1.00	**1.67**
	e-u-u	0.67	*2.00*	**2.00**
Equal	u-e-e	0.00	0.00	0.00
	e-u-e	0.00	0.00	0.00
	e-e-u	0.00	0.00	0.00
	e-e-e	0.00	0.00	0.00

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcomes

Modified Bartling et al: Proposer Punishment

	Proposers vote	
Chosen proposal	Unequal	Equal
((9,1),(7,3))	1.64	0.77
((9,1),(5,5))	2.25	0.29
((7,3),(5,5))	1.33	0.17

Modified Bartling et al: Multivariate Analysis

	Replication	Modified Bartling et al		
		Propsoal		
		(9,1),(7,3)	(9,1),(5,5)	(7,3),(5,5)
Choice Unequal	2.24	0.86	2.82	1.22
	(0.32)	(0.25)	(0.66)	(0.62)
Proposer		0.62	0.24	0.38
		(0.22)	(0.49)	(0.62)
Pivotal to Unequal	0.32	0.09	0.97	1.22
	(0.25)	(0.29)	(0.53)	(0.81)
Constant	-3.17	-2.00	-3.22	-1.75
	(0.28)	(0.20)	(0.62)	(0.51)
Log Likelihood	-253.15	-253.88	-60.23	-39.97
Num. obs.	648	504	144	72

Logistic regression. Outcome variable: DM punished $=1$

red: $p < 0.01$, blue: $p < 0.1$

12

Discussion

Summary

- In general, pivotality is not used as heuristics for responsibility attribution
  - The Bartling et al's results are not reproduced in our replication
  - Sometimes pivotalty matters, but depending on the contexts
- If we introduce the proposal stage, agenda setting power heuristic is strong

General discussion: Pivotality or agenda setter

- Agenda setting matters and largest voting power matters, but pivotality does not
- But pivotal power sometimes work:
  - By framing (Duch and Matsuo 2014)
  - In sequential voting, when the context is right

Appendix

- Same setting as Modified Bartling et al
- 30 rounds, without strategy method

Multi-round experiment: Multivariate Analysis

	Modified Bartling et al		
	Propsoal		
	(9,1),(7,3)	(9,1),(5,5)	(7,3),(5,5)
Choice Unequal	0.95	2.87	2.52
	(0.17)	(0.31)	(0.32)
Proposer	0.49	-0.05	0.37
	(0.15)	(0.26)	(0.27)
Pivotal to Unequal	0.07	0.25	0.35
	(0.21)	(0.29)	(0.28)
Constant	-1.41	-3.58	-3.88
	(0.11)	(0.27)	(0.29)
Log Likelihood	-548.72	-214.80	-239.27
Num. obs.	936	819	945

Logistic regression. Outcome variable: DM punished =1
red: $p < 0.01$

Multi-round experiment: DM Punishment (1)

Proposal: ((9,1),(7,3))

Allocation	Voting sequence	N	Average Punishment		
			Decision Maker		
			1	2	3
Unequal	u-u-u	5	*0.87*	**1.20**	0.73
	u-u-e	15	*1.69*	**1.78**	0.36
	u-e-u	15	*1.51*	0.22	**1.31**
	e-u-u	16	0.29	*1.73*	**1.54**
Equal	u-e-e	10	1.97	0.07	0.10
	e-u-e	11	0.52	2.76	0.27
	e-e-u	2	0.33	0.33	0.50
	e-e-e	30	0.89	0.80	0.66

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcomes

Proposal: ((9,1),(5,5))

Allocation	Voting sequence	N	Average Punishment		
			Decision Maker		
			1	2	3
Unequal	u-u-u	1	*0.00*	**0.00**	0.00
	u-u-e	11	*1.76*	**1.15**	0.58
	u-e-u	9	*1.30*	0.07	**0.81**
	e-u-u	7	0.19	*2.24*	**1.48**
Equal	u-e-e	6	1.11	0.00	0.00
	e-u-e	10	0.00	0.37	0.00
	e-e-u	0			
	e-e-e	47	0.04	0.04	0.13

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcome

Proposal: ((7,3),(5,5))

Allocation	Voting sequence	N	Average Punishment Decision Maker		
			1	2	3
Unequal	u-u-u	6	*0.78*	**0.44**	0.28
	u-u-e	13	*1.28*	**1.08**	0.23
	u-e-u	9	*0.59*	0.37	**0.93**
	e-u-u	7	0.00	*1.38*	**0.95**
Equal	u-e-e	15	0.38	0.00	0.00
	e-u-e	11	0.18	0.36	0.03
	e-e-u	1	0.00	0.00	0.00
	e-e-e	43	0.04	0.02	0.04

bold: Pivotal for less equal outcomes

italic: First to vote for unequal outcome

18

Multi-round experiment: Proposer Punishment

	Proposers vote	
Chosen proposal	Unequal	Equal
((9,1),(7,3))	1.93	1.29
((9,1),(5,5))	1.25	0.07
((7,3),(5,5))	0.97	0.08