Public versus Secret Voting in Committees

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Introduction

- Decision-making in committees is a central aspect of many organizations: legislatures, courts, central banks
- The issues confronted by these committees are often complex and involve a variety of conflicts and personal interests
- Voting and participation decisions are affected by:
  i. Common interest and competence (common value)
  ii. Private interest (bias)
  iii. Career concern (reputation)
  iv. Observability (transparency)
- Should the individual votes of committee members be revealed?

The Idea

- In our model, there are two states of the world
  - competent members receive an informative signal about the state of the world
  - incompetent members do not receive any signal

- The relevant set of actions for each type of agent is

  i. Competent members:

$$\begin{cases} \text{Vote correctly} & \Rightarrow \text{ common value and reputation} \\ \text{Abstain} & \\ \text{Vote incorrectly} & \Rightarrow \text{ bias} \end{cases}$$

  ii. Incompetent members:

$$\begin{cases} \text{Vote (bias or prior)} & \Rightarrow \text{ bias and reputation} \\ \text{Abstain} & \Rightarrow \text{ common value} \end{cases}$$

- By increasing the concern for reputation, public voting creates incentives in the following directions:

  i. Competent members:

$$\begin{cases} \text{Vote correctly} \\ \text{Abstain} \\ \text{Vote incorrectly} \end{cases}$$

  ii. Incompetent members:

$$\begin{cases} \text{Vote (bias or prior)} \\ \text{Abstain} \end{cases}$$

- **Main Result:** The effect of transparency on voting behavior depends on the level of competence of the agent

  i. Positive Effect: Transparency generates an incentive for competent agents to vote correctly rather than according to their biases

  ii. Negative Effect: Transparency generates an incentive for incompetent agents to vote rather than to abstain

- **Trade-off:** While transparency "attenuates" the biases of competent members, it may actually "exacerbate" the biases of incompetent members

- The positive effect is dominant when the magnitude of the bias is large $\Rightarrow$ public voting leads to better decisions
- The negative effect is dominant when the magnitude of the bias is small $\Rightarrow$ secret voting leads to better decisions
- Public (secret) voting should be adopted when ideological or self-interested motives are large (small)
- What does it mean/imply a large vs small bias?
  - Experts versus non-experts
  - Bureaucrats versus politicians
  - Bad times versus good times

Literature

Transparency versus Secrecy in Committees: Theory

- Transparency distorts agents' behavior since they want to convey information about their types: Stasavage (2004), Levy (2007), Gersbach and Hahn (2004, 2008), Swank and Visser (2007). Our paper: agents are biased, care about common value and reputation and they can abstain

Transparency versus Secrecy in Committees: Empirics

- Data: Hansen, McMahon and Prat (2018), Meade and Stasavage (2008), Swank et al. (2008)
- Lab: Fehrler and Hughes (2014), Morton and Ou (2015)

Model: Individuals

- Committee members: $n \geq 3$
- State of the world: $\omega \in \{A, B\}$ with $\Pr(\omega = A) \geq \frac{1}{2}$
- Competence: $\tau_i \in \{\mathtt{c}, \mathtt{nc}\}$ with $\Pr(\tau_i = \mathtt{c}) = \sigma$
  - Competent agents ($\mathtt{c}$): receive a perfectly informative signal
  - Incompetent agents ($\mathtt{nc}$): receive no signal
- Bias: $\beta_i \in \{A, B\}$ with $\Pr(\beta_i = A) = p$
  - Every agent is biased towards either A or B

Model: Voting Rule

- Vote: $v_i \in \{A, B, \emptyset\}$
- Committee's decision $x \in \{A, B\}$ is taken by simple majority. Ties are broken randomly
- Voting rule: $\lambda \in \{\mathtt{p}, \mathtt{s}\}$
  - Public voting: individual votes are observed
  - Secret voting: only the aggregate number of votes for each alternative is observed

Model: Utility

- The utility of a member of the committee depends on three components:

  i. Common value (α): whether the decision is correct or not, $x = \omega$

  ii. Bias (γ): whether the decision matches the individual bias, $x = \beta_i$

  iii. Reputation (ϕ): posterior probability that an agent is competent and voted correctly

$$r_i^{\omega,\lambda} \equiv \Pr(\tau_i = c, v_i = \omega | \omega, \mathcal{I}^\lambda)$$

- Utility function:

$$U_i^{\beta_i,\lambda}(x,\omega) = \underbrace{\mathbb{I}_{\{x=\omega\}}\alpha}_{\text{common value}} + \underbrace{\mathbb{I}_{\{x=\beta_i\}}\gamma}_{\text{bias}} + \underbrace{\phi r_i^{\omega,\lambda}}_{\text{reputation}}$$

Model: Timing

The sequence of events is

1. The state of the world ω is realized and the competent members receive a perfectly informative signal

2. Each member simultaneously decides whether to vote for A or B or abstain

3. The decision is taken by majority rule and ties are broken randomly

4. The reputation $r_i^{\omega,\lambda}$ is computed conditional on the state of the world and whatever information about votes is available under voting rule λ

Equilibrium: Basic Properties

- We focus on a class of symmetric pure strategy equilibria where players do not use weakly dominated strategies
- Observation 1: *Abstaining is a weakly dominated strategy for competent members*
- Observation 2: *There is no equilibrium in which a competent member who receives a signal different than her bias $s_i \neq \beta_i$ votes against the signal and an incompetent member abstains*

Equilibrium

- **Proposition 1:** *There are three classes of equilibria in this model:*

  a. *Fully Competent Equilibrium: All competent members vote according to their signal and all incompetent members abstain*

  b. *Partially Competent Equilibrium: All competent members vote according to their signal and not all incompetent members abstain*

  c. *Biased Equilibrium: Some (or all) competent members vote according to their biases and all incompetent members vote*

Main Mechanism

- Let μ_e denote the external evaluator's beliefs about the behavior of committee members

- Under public voting, the reputation depends only on each member's own vote:

$$r_{\mu_e}^{\omega,\lambda} \equiv \Pr_{\mu_e}(\tau_i = c | v_i = \omega) \cdot \mathbb{I}_{\{v_i=\omega\}}$$

- Under secret voting, the reputation is common across members and depend on the total number of correct votes in the committee:

$$r_{\mu_e}^{\omega,\lambda} \equiv \Pr_{\mu_e}(\tau_i = c | v_i = \omega). \ \frac{1}{n} \sum_i \mathbb{I}_{\{v_i=\omega\}}$$

- Note that under secret voting the impact of an agent's correct vote on his reputation is diluted in proportion to the size of the committee

Fully Competent Equilibrium

- Competent members must prefer to vote correctly. Incompetent members must prefer to abstain
- **Proposition 2:** A fully competent equilibrium can be sustained, if and only if

$$\gamma \leq \overline{\gamma}^{\lambda}_{full} < \alpha$$

- If a fully competent equilibrium can be sustained under public voting, then it can also be sustained under secret voting:

$$\overline{\gamma}^{p}_{full} \leq \overline{\gamma}^{s}_{full}$$

- For incompetent members, the interaction between transparency and career concerns creates an incentive for them to vote, since abstaining perfectly reveals their lack of information

Partially Competent Equilibrium

- Competent members must prefer to vote correctly. Not all incompetent members abstain
- **Proposition 3:** A partially competent equilibrium can be sustained if and only if

$$\underline{\gamma}^{\lambda}_{part} \leq \gamma \leq \overline{\gamma}^{\lambda}_{part},$$

with $\underline{\gamma}^{\lambda}_{part} < \alpha$ and $\overline{\gamma}^{\lambda}_{part} > \alpha$

- If a partially competent equilibrium can be supported under secret voting, then it can also be supported under public voting:

$$\underline{\gamma}^{p}_{part} < \underline{\gamma}^{s}_{part} < \overline{\gamma}^{s}_{part} < \overline{\gamma}^{p}_{part}$$

- Transparency acts to counter-balance the effect of the bias in competent members by inducing them to vote correctly. At the same time, it also provides incentive for the incompetent members to vote rather than to abstain

Biased Equilibrium

- Not all competent members must prefer to vote according to their signal. Incompetent members must prefer to vote
- **Proposition 4:** A biased equilibrium can be sustained if and only if

$$\alpha < \underline{\gamma}^{\lambda}_{bias} \leq \gamma$$

- If a biased equilibrium can be supported under public voting, then it can also be supported under secret voting:

$$\underline{\gamma}^{s}_{bias} < \underline{\gamma}^{p}_{bias}$$

- Secrecy reduces the reputational gains associated with a correct vote, thus making competent members more inclined to vote according to their biases

Symmetric Case

- We provide a sharper characterization of the equilibrium conditions by imposing symmetry

i. Symmetric prior: $\Pr(\omega = A) = \frac{1}{2}$

ii. Symmetric distribution of biases: $\Pr(\beta_i = A) = \frac{1}{2}$

Fully Competent Equilibrium

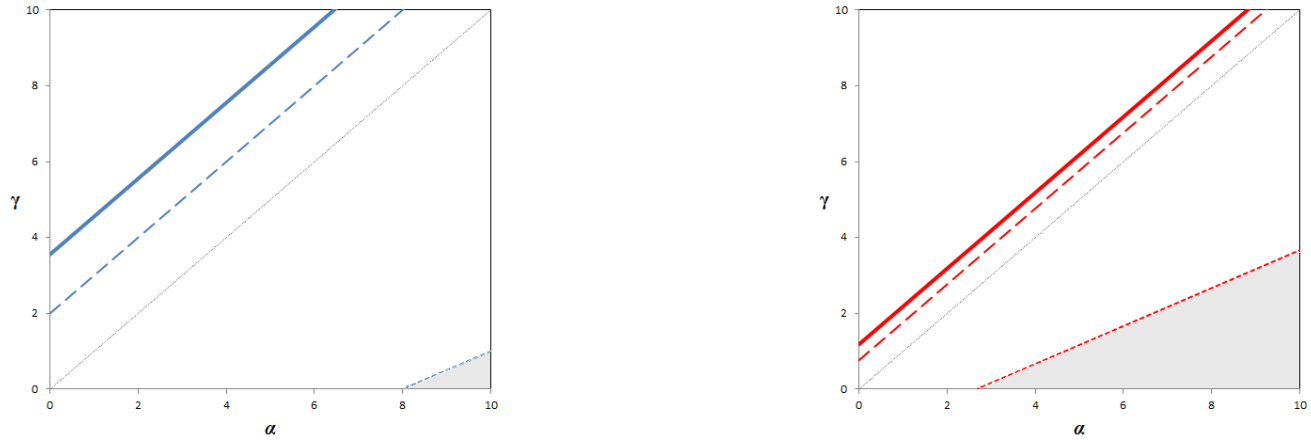


Figure: Public vs Secret

- If a FCE can be sustained under public voting, then it can also be sustained under secret voting
- Interaction between transparency and career concerns creates an incentive for incompetents to vote, since abstaining perfectly reveals their lack of information

Partially Competent Equilibrium

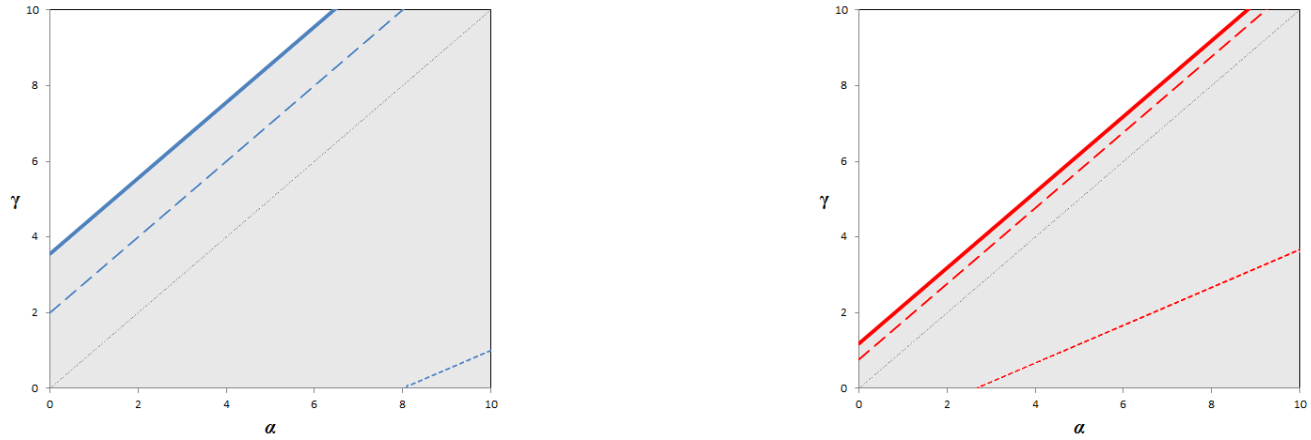


Figure: Public vs Secret

- If a PCE can be sustained under secret voting, then it can also be sustained under public voting
- Transparency acts to counter-balance the effect of the bias in competent members by inducing them to vote correctly and it also provides incentive for the incompetent members to vote

Biased Equilibrium

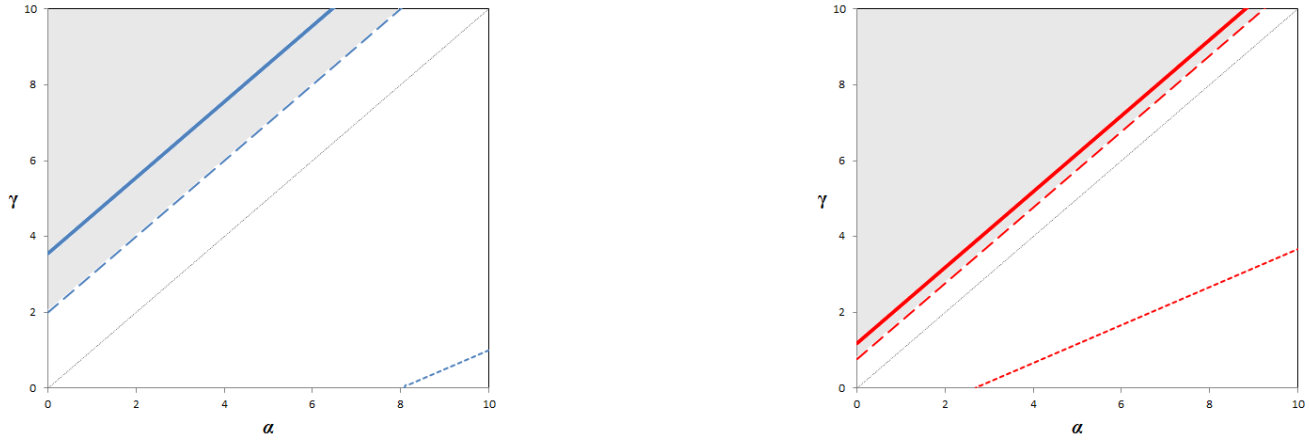
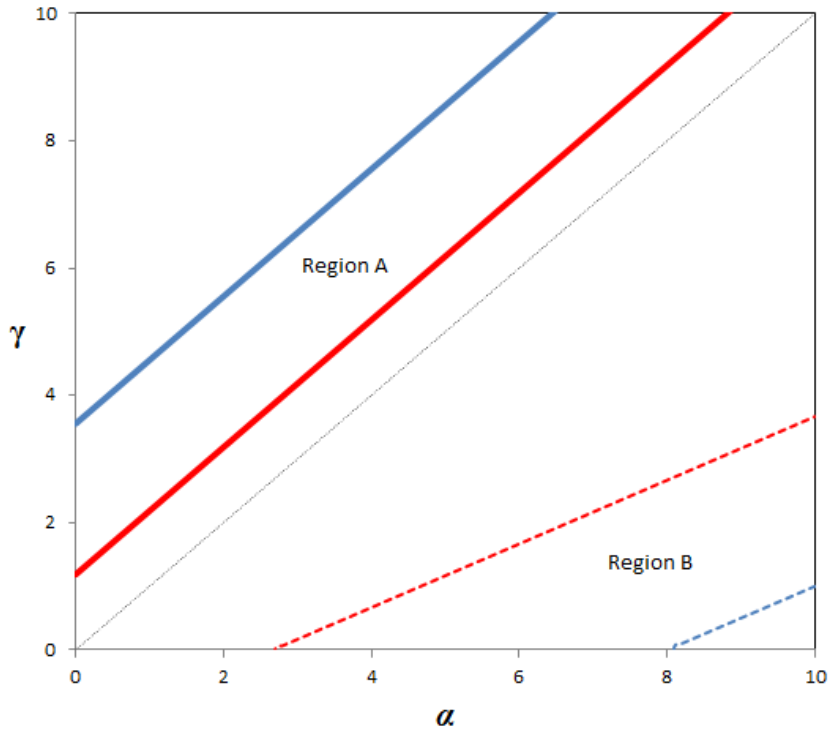


Figure: Public vs Secret

- If a BE can be sustained under public voting, then it can also be sustained under secret voting
- Secrecy reduces the reputational gains associated with a correct vote: competent members more inclined to vote according to bias

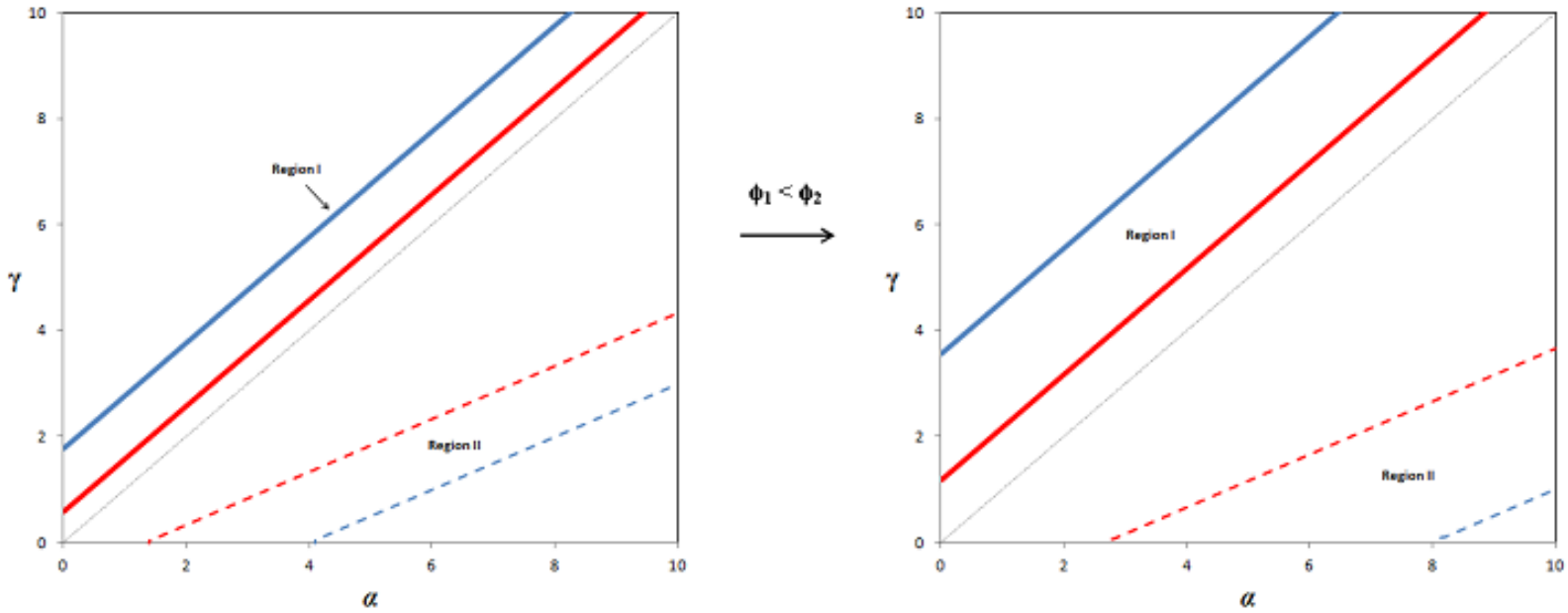
Public versus Secret Voting



Region A $\Rightarrow$ partially competent possible under public but not secret voting

Region B $\Rightarrow$ fully competent possible under secret but not public voting

Transparency and Career Concern



Extensions

- Career-Concern rewards
- "Fully" secret voting
- Information sharing
- Precision of signals, unbiased agents, dynamics

Experimental Design

- Simplifying assumptions
  - *i*. The reputation associated with a correct vote is exogenously given, r^{λ}
  - *ii*. Under public voting, the reputation is strictly positive, $r^{p} > 0$
  - *iii*. Under secret voting, the reputation is set to zero, $r^{s} = 0$

- Other parameters
  - *i*. Members: $n = 3$
  - *ii*. Prior: $\Pr(\omega = A) = \frac{1}{2}$
  - *iii*. Bias: $\Pr(\beta_i = A) = \frac{1}{2}$
  - *iv*. Competence: $\Pr(\tau_i = \mathrm{c}) = \frac{1}{2}$

Experimental Design

- Subjects were randomly divided into groups of three members
- Each group had to choose between two colors, “blue” and “yellow”
- Each subject could vote for “blue”, “yellow” or “abstain”
- The decision was taken by majority and ties were broken randomly

Experimental Design

- The state (color of the group) for each group was "blue" or "yellow" with equal probability
- Each subject was biased (your color) towards "blue" or "yellow" with equal probability
- Each subject received either an "informative" or an "uninformative" message about the state with equal probability

Experimental Design

- The payoffs were distributed as follows:

  i. Common value:

  $$\boxed{\text{Decision} = \text{State}} \Rightarrow \alpha \text{ points}$$

  ii. Bias:

  $$\boxed{\text{Decision} = \text{Bias}} \Rightarrow \gamma \text{ points}$$

  iii. Reputation:

  $$\boxed{\text{Vote} = \text{State}} \Rightarrow r \text{ points}$$

Treatments

Treatment	α	γ	r	Prediction
Low/Secret	10	1	1	Fully or Partially
Low/Public	10	1	9	Partially
High/Secret	10	14	1	Biased
High/Public	10	14	9	Partially

- Conversion: 1€ = 100 pts. Show-up fee: 5€. Average payment $\simeq$ 9.75€ for 45'

Sessions

- The experiment was conducted at the Bologna Laboratory for Experiments in Social Science (BLESS)
- It followed a between-subjects design with a total of 12 sessions (3 sessions per treatment) with 18 subjects each
- Subjects were randomly divided into groups of three members and were randomly re-assigned in every period to different groups formed by participants coming from a fixed matching-group composed of 9 subjects
- Each treatment was repeated for 32 rounds, the first two being practice non-paid rounds. In total, 216 different subjects took part in the experiment

Decisions

Treatment	Correct Decisions (%)		Correct Decisions - Predicted (%)
	Full Sample	Last 5 Rounds	
Low-Bias/Secret-Voting	85.37	88.88	93.00 / 84.00
Low-Bias/Public-Voting	84.25	76.85	84.00
High-Bias/Secret-Voting	66.48	64.81	50.00
High-Bias/Public-Voting	77.77	83.33	84.00
Obs	540	108	

Individual Choices: Uninformed Voters

Treatment	Obs	Uninformed Voters		
		Abstention (%)	Bias (%)	Against-Bias (%)
A. Full Sample				
Low-Bias/Secret-Voting	796	50.37 †	39.82 †	9.79
Low-Bias/Public-Voting	847	21.60	60.69 †	17.70
High-Bias/Secret-Voting	789	14.57	80.98 †	4.43
High-Bias/Public-Voting	814	5.77	87.22 †	7.00
B. Last 5 Rounds				
Low-Bias/Secret-Voting	160	51.25 †	40.00 †	8.75
Low-Bias/Public-Voting	182	18.68	62.63 †	18.68
High-Bias/Secret-Voting	159	11.32	84.27 †	4.40
High-Bias/Public-Voting	146	1.36	93.15 †	5.47

Individual Choices: Informed Voters

Treatment	Obs	Informed Voters with Signal ≠ Bias		
		Signal (%)	Bias (%)	Abstention (%)
A. Full Sample				
Low-Bias/Secret-Voting	393	95.41 †	1.78	2.79
Low-Bias/Public-Voting	385	97.66 †	2.07	0.25
High-Bias/Secret-Voting	407	40.78	49.87 †	9.33
High-Bias/Public-Voting	415	79.27 †	16.14	4.57
B. Last 5 Rounds				
Low-Bias/Secret-Voting	79	93.67 †	1.26	5.06
Low-Bias/Public-Voting	74	98.64 †	1.35	0.00
High-Bias/Secret-Voting	86	40.69	51.16 †	8.13
High-Bias/Public-Voting	84	92.85 †	5.95	1.19

Voting Profiles

Treatment	Obs	Fully-Competent (%)	Partially-Competent (%)	Biased (%)	Other (%)
Low-Bias/Secret-Voting	238	40.33*	31.93*	0.04	27.70
Low-Bias/Public-Voting	254	15.35	45.27*	0.00	39.38
High-Bias/Secret-Voting	245	2.04	31.02	29.38*	37.56
High-Bias/Public-Voting	270	1.85	64.44*	10.74	22.97