Sincere Lobbying Formation

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**Claim**: the rich make higher campaign contributions than the poor $\Rightarrow$ government adopts policy outcome the rich prefer.
Motivation

**Claim**: the rich make higher campaign contributions than the poor ⇒ government adopts policy outcome the rich prefer

**Evidence**: Laborers’ Political League is the 13th in the list of ”Top 50” US PACs by contributions to candidates in 1999-2000
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**Literature:** Lobbying favors the poor if they have advantage in politics rather than in production (Campante and Ferreira, 2007)
Motivation

- **Claim**: the *rich* make higher campaign contributions than the *poor* ⇒ government adopts policy outcome the rich prefer

- **Evidence**: Laborers’ Political League is the 13th in the list of ”Top 50” US PACs by contributions to candidates in 1999-2000

- **Literature**: Lobbying favors the poor if they have advantage in politics rather than in production (Campante and Ferreira, 2007)

- **Our contribution**: To model decision rule individuals use to decide whether to participate in lobbying or not
Literature on Lobbying

- The Logic of Collective Action: Olson (1971)
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- Endogenous Lobbying
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Endogenous Lobbying

- Firms decide whether to organize into one industry lobby: Damania and Fredriksson (2000, 2003), Magee (2002)
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**Endogenous Lobbying**

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Literature on Lobbying

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Endogenous Lobbying

- Firms decide whether to organize into one industry lobby: Damania and Fredriksson (2000, 2003), Magee (2002)
- Heterogeneous individuals’ decision to make campaign contributions: Glazer and Gradstein (2005)
Sincere Lobbying Formation

New Concept

- An Equilibrium occurs only if no lobby member would prefer her lobby to stop existing
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**Reasoning:**
- Individuals enjoy to participate in special interest politics (to show allegiance to their interest group)
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- Lobbying is a social norm of the society.
Sincere Lobbying Formation

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  - Individuals enjoy to participate in special interest politics (to show allegiance to their interest group)
  - Lobbying is a social norm of the society
  - Ethical Society: individuals bear high psychological cost if free-riding
Sincere Lobbying Formation
New Concept

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- Reasoning:
  - Individuals enjoy to participate in special interest politics (to show allegiance to their interest group)
  - Lobbying is a social norm of the society
  - Ethical Society: individuals bear high psychological cost if free-riding
  - Smith (2000): the public overcomes free-riding problem in issues that affect majority of population (tax rates, air pollution, product liability)
Roadmap

- Individuals with more extreme preferences are more likely to participate in lobbying
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- If government is Utilitarian then lobbying favors the poor
Individuals with more extreme preferences are more likely to participate in lobbying.

If government is Utilitarian then lobbying favors the poor.

If government is Pro-Median then lobbying favors the rich.
Roadmap

- Individuals with more extreme preferences are more likely to participate in lobbying

- If government is Utilitarian then lobbying favors the poor

- If government is Pro-Median then lobbying favors the rich

- If government cares only about contributions then all individuals participate in lobbying and final policy is socially optimal
Model of Public Goods Provision I

- One-dimensional policy space; Complete information
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  - $x \sim F(\cdot)$ with mean $\hat{x}$ and support $[0, \infty)$
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- Individuals heterogeneous in income $x$. The size of population is normalized to one
  - $x \sim F(\cdot)$ with mean $\hat{x}$ and support $[0, \infty)$
  - $x$ is skewed to the right
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  - $x \sim F(\cdot)$ with mean $\hat{x}$ and support $[0, \infty)$
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  - $u(c, g) = c + \sqrt{g}$, $c$ - private consumption, $g$ - public goods
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- Public Goods Provision:
  - Proportional tax $t \in [0, 1]$ on income: $c(x) = (1 - t)x$
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- Public Goods Provision:
  - Proportional tax $t \in [0, 1]$ on income: $c(x) = (1 - t)x$
  - Government BC: $t\hat{x} = g$
Individual $x$’s utility:

$$u(x, t) = (1 - t)x + \sqrt{t^2x}$$
Model of Public Goods Provision II

- Individual $x$’s utility:

$$u(x, t) = (1 - t)x + \sqrt{tx}$$

- Individual $x$’s preferred tax:

$$t_x = \begin{cases} 
1 & \text{if } x \in [0, \frac{1}{2}\sqrt{x}] \\
\frac{\hat{x}}{4x^2} & \text{if } x \in (\frac{1}{2}\sqrt{x}, \infty)
\end{cases}$$
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\end{cases}$$

- Low-income individuals – the poor

- High-income individuals – the rich
Model of Public Goods Provision III
Normative Benchmarks

- Utilitarian Social Welfare Function:

\[ U^o(t) = (1 - t)\hat{x} + \sqrt{t\hat{x}} \]

\[ \downarrow \]

\[ t^o = \frac{1}{4\hat{x}} \]
Utilitarian Social Welfare Function:

\[ U^o(t) = (1 - t)\hat{x} + \sqrt{t}\hat{x} \]

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Median Voter Preferences (\( F(x_m) = \frac{1}{2} \)):

\[ U^m(t) = (1 - t)x_m + \sqrt{t}\hat{x} \]

\[ \downarrow \]

\[ t^m = \frac{\hat{x}}{4x^2_m} \]
Model of Public Goods Provision IV

Economy

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Sincere Lobbying Formation
Model V
Incumbent Government

- Government’s Objective Function:

\[ \alpha U(t) + m, \alpha \geq 0 \]

\( m \) - government’s private welfare
Model V
Incumbent Government

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- Utilitarian Government:
  \[ U(t) = U^o(t) \]
Model V
Incumbent Government

- Government’s Objective Function:
  \[ \alpha U(t) + m, \alpha \geq 0 \]
  
  \( m \) - government’s private welfare

- Utilitarian Government:
  \[ U(t) = U^o(t) \]

- Pro-Median Government:
  \[ U(t) = U^m(t) \]
Two lobbies can be formed:

$P$ - lobby of the poor (defends interests of the poor: higher tax)

$R$ - lobby of the rich (defends interests of the rich: lower tax)
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Each individual is either a member of one lobby ($P$ or $R$), or does not belong to any lobby
Two lobbies can be formed:

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No cost of forming lobby
Model VI

Lobbying

- Two lobbies can be formed:
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- No cost of forming lobby

- Two stages:
  - Sincere Lobbying Formation
  - Lobbies Contribution Game (Common-Agency)
Model VI
Lobbying

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- Two stages:
  - Sincere Lobbying Formation
  - Lobbies Contribution Game (Common-Agency)

- Equilibrium concept – Subgame Perfect
Lobbies maximize the joint net-of-contribution welfare of their members:

\[ U^P(t) - C^P(t) = \int_{x \in P} u(x, t)f(x)dx - C^P(t) \]

\[ U^R(t) - C^R(t) = \int_{x \in R} u(x, t)f(x)dx - C^R(t) \]
Lobbies Contribution Game – 2nd Stage

- Lobbies maximize the joint net-of-contribution welfare of their members:

\[
U^P(t) - C^P(t) = \int_{x \in P} u(x, t)f(x)dx - C^P(t)
\]

\[
U^R(t) - C^R(t) = \int_{x \in R} u(x, t)f(x)dx - C^R(t)
\]

- **Truthful contribution schedules** (*Lobbies reveal their true preferences: they contribute to government the maximum amount they are willing to exchange for the government’s decision*)

\[
C^l(t) = \max[U^l(t) - b^l, 0], l = P, R
\]
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**Truthful contribution schedules** *(Lobbies reveal their true preferences: they contribute to government the maximum amount they are willing to exchange for the government’s decision)*

\[ C^l(t) = \max[U^l(t) - b^l, 0], l = P, R \]

**Government maximizes:**

\[ \alpha U(t) + C^P(t) + C^R(t) \]
Sincere Lobbying Formation – 1st Stage

Sincere Lobbying Formation Condition:

An equilibrium occurs only if no lobby member would prefer her lobby to cease existing.
Sincere Lobbying Formation Condition:

An equilibrium occurs only if no lobby member would prefer her lobby to cease existing

- if \( x \) belongs to lobby \( P \), then \( u(x, t^*) - \frac{\int_{z \in P} C_P^* f(z) dz}{\int_{z \in P} f(z) dz} > u(x, t^{-P}) \)
- if \( x \) belongs to lobby \( R \), then \( u(x, t^*) - \frac{\int_{z \in R} C_R^* f(z) dz}{\int_{z \in R} f(z) dz} > u(x, t^{-R}) \)

Notation:

\[
\begin{align*}
t^* &= \arg \max \{ \alpha U(t) + C_P(t) + C_R(t) \} \\
t^{-R} &= \arg \max \{ \alpha U(t) + C_P(t) \} \\
t^{-P} &= \arg \max \{ \alpha U(t) + C_R(t) \}
\end{align*}
\]
Characterization of Equilibria I

- Notation:
  - Sincere Indifferent Poor $\pi$: $u(\pi, t^*) - \frac{C_P^*}{\int_{z \in P} f(z) dz} = u(\pi, t^{-P})$
  - Sincere Indifferent Rich $\rho$: $u(\rho, t^*) - \frac{C_R^*}{\int_{z \in R} f(z) dz} = u(\rho, t^{-R})$
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- **Lemma:**
  If in equilibrium there exist lobby $P$ and lobby $R$ then
  
  $$P = \{x | x \in [0, \pi)\}$$
  $$R = \{x | x \in (\rho, \infty)\}$$
Characterization of Equilibria I

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  - Sincere Indifferent Poor $\pi$: $u(\pi, t^*) - \frac{C^P}{\int_{z \in P} f(z) dz} = u(\pi, t^{-P})$
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  $P = \{x | x \in [0, \pi)\}$
  
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- Each individual is either a member of one lobby ($P$ or $R$), or does not belong to any lobby: $\pi \leq \rho$
Characterization of Equilibria II
Lobbies Structure

\[ f(x) \]

\[ \pi \quad \rho \]

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Sincere Lobbying Formation
Numerical Solution
Lognormal Distribution of Income

- $x$ has lognormal distribution: $\ln x \sim N(\mu, \sigma^2)$

$$f(x|\mu, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma}} \frac{1}{x} e^{-\frac{(\ln x - \mu)^2}{2\sigma^2}}, \ 0 < x < \infty, \ -\infty < \mu < \infty, \ \sigma > 0$$

$$\hat{x} = e^{\mu + \frac{\sigma^2}{2}}, \ Var = e^{2(\mu + \sigma^2)} - e^{2\mu + \sigma^2}$$
Numerical Solution
Lognormal Distribution of Income

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$$\hat{x} = e^{\mu + \frac{\sigma^2}{2}}, \ Var = e^{2(\mu+\sigma^2)} - e^{2\mu+\sigma^2}$$

- **Data**: mean and std. deviation for United States from Luxembourg Income Study dataset for households
Utilitarian Government: Results

- Final tax favors lobby $P$

\[ t^* > t^o \]
Utilitarian Government: Results

- Final tax favors lobby $P$
  \[ t^* > t^0 \]

- Lobby $P$ is more numerous than lobby $R$ ($s^i$ – size of lobby $i$)
  \[ s^P > s^R \]
Utilitarian Government: Results

- Final tax favors lobby $P$
  \[ t^* > t^o \]

- Lobby $P$ is more numerous than lobby $R$ ($s^i$ – size of lobby $i$)
  \[ s^P > s^R \]

- $P$’s total contributions > $R$’s total contributions
  \[ C^P > C^R \]
Utilitarian Government: Results

- Final tax favors lobby $P$
  \[ t^* > t^O \]

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  \[ s^P > s^R \]

- $P$’s total contributions $> R$’s total contributions
  \[ C^P > C^R \]

- $P$’s per member contributions $< R$’s per member contributions
  \[ c^P < c^R \]
Utilitarian Government $\alpha = 1$: US data
Pro-Median Government: Results

- Final tax favors lobby $R$

$$t^* < t^m$$
Pro-Median Government: Results

- Final tax favors lobby $R$
  \[ t^* < t^m \]

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  \[ s^P > s^R \]
Pro-Median Government: Results

- Final tax favors lobby $R$
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  \[ s^P > s^R \]

- $P$’s total contributions $< R$’s total contributions
  \[ C^P < C^R \]
Pro-Median Government: Results

- Final tax favors lobby $R$
  \[ t^* < t^m \]

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  \[ s^P > s^R \]

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Pro-Median Government $\alpha = 1$: US data
Government cares only about contributions: $\alpha = 0$

- All individuals participate in lobbying

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Sincere Lobbying Formation
Government cares only about contributions: $\alpha = 0$

- All individuals participate in lobbying
- Final tax is socially optimal

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Government cares only about contributions: $\alpha = 0$

- All individuals participate in lobbying
- Final tax is socially optimal
  
  $$t^* = t^o$$

- Lobby $P$ is more numerous than lobby $R$
  
  $$s^P > s^R$$

- $P$’s total contributions $< R$’s total contributions
  
  $$C^P < C^R$$

- $P$’s per member contributions $< R$’s per member contributions
  
  $$c^P < c^R$$
\(\pi\) and \(\rho\) as function of \(\alpha\): US data
Tax Rate as function of $\alpha$ : US data
Results

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- Individuals with **more extreme preferences** are more likely to participate in lobbying.
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- **Numerical Solution**: data from Luxembourg Income Study.
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- **Numerical Solution**: data from Luxembourg Income Study.
- **Utilitarian Government**: lobbying favors the poor.

\[
s^P > s^R, \quad C^P > C^R, \quad c^P < c^R
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Results

- **Sincere Lobbying Formation**: an equilibrium occurs only if no lobby member would prefer her lobby to stop existing.
- Individuals with more extreme preferences are more likely to participate in lobbying.
- **Numerical Solution**: data from Luxembourg Income Study.
- **Utilitarian Government**: lobbying favors the poor
  \[ s^P > s^R, C^P > C^R, c^P < c^R \]
- **Pro-Median Government**: lobbying favors the rich
  \[ s^P > s^R, C^P < C^R, c^P < c^R \]
Results

- **Sincere Lobbying Formation**: an equilibrium occurs only if no lobby member would prefer her lobby to stop existing.

- Individuals with *more extreme preferences* are more likely to participate in lobbying.

- **Numerical Solution**: data from Luxembourg Income Study.

- **Utilitarian Government**: lobbying favors the poor.

  \[ s^P > s^R, \ C^P > \ C^R, \ c^P < c^R \]

- **Pro-Median Government**: lobbying favors the rich.

  \[ s^P > s^R, \ C^P < \ C^R, \ c^P < c^R \]

- **Government cares only about contributions**: all individuals participate in lobbying and final tax is socially optimal.

  \[ s^P + s^R = 1, \ t^* = t^o \]