Models of Probabilistic Voting, Lobbying and Special Interest Capture

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Lectures 14-15
We shall examine models of probabilistic voting, where voters care both about policy and non-policy (candidate image, loyalty, ethnic/gender identity) dimensions.

Models in the Downsian tradition: two candidates/parties, pre-election commitments to policy platforms.

1. Conditions for First-Best Accountability
2. Imperfections:
   - Voter Turnout/Awareness
   - Pork-Barrel programs
   - Lobbies and Elite Capture
Analytical Framework

- Downsian political economy model, extended to incorporate probabilistic voting
- Advantage of the extension is that the policy space and citizen preferences are very general
- Policy space: $P$ is set of feasible policies for a local government
- Citizen groups: $i = 1, \ldots, G$ with demographic weights $\alpha_i > 0$, $\sum_i \alpha_i = 1$ and utility functions $U_i(p) : P \to \mathbb{R}$
- Groups classified on the basis of location, age, occupation, assets
- Utilitarian first-best/optimal policy: $p^*$ which maximizes $W(p) \equiv \sum_j \alpha_j U_j(p)$ over $P$, where welfare weights are demographic weights
Assumptions

- Two candidates \(A, B\) in the election
- Elected official gets a large fixed salary or attains ego-rent \(R\), which is exogenous and fixed
- Candidates objective is to maximize probability of winning the election (chance to earn \(R\))
- No scope for siphoning off resources (corruption/embezzlement)
Elections

- First stage: candidates announce their policy platforms $p_A, p_B$, and commit to these if elected
- Second stage: citizens vote
- Third Stage: votes are counted, candidate with more votes is elected
Probabilistic Voting

- Candidates are also differentiated on the basis of personal characteristics (history, appearance, ethnicity, gender etc)
- Voters care about both policy and candidate characteristics
- Dispersed (subjective) preferences over candidate characteristics: relative preference of voter of type $i$ for candidate represented by realization of random variable $\epsilon_i$ with a given (smooth) probability distribution
Voters are of two types: *informed* and *uninformed*

Fraction $\lambda_i$ of type $i$ citizens are informed; random fraction $\tau_i$ of voters of type $i$ (both informed and uninformed) turn out to vote

Informed voter of type $i$ prefers candidate A if $U_i(p_A) + \epsilon_i > U_i(p_B)$

Uninformed voter of type $i$ prefers candidate A if $\epsilon_i > 0$

Vote counting errors: candidate A wins with probability $h_i(v_A)$ if $v_A$ is vote share of A, where $h_i$ is smooth, increasing, $h_i\left(\frac{1}{2}\right) = \frac{1}{2}$, convex below and concave above $\frac{1}{2}$

Sincere voting is a dominant strategy (given two candidates)
Simplifying Assumption

- Assume that $\epsilon_i$ is uniformly distributed with constant density $\sigma_i$ on $[b_i - \frac{1}{2\sigma_i}, b_i + \frac{1}{2\sigma_i}]$

- $b_i$: average bias of type $i$ citizen in favor of candidate A

- $\sigma_i$: swing propensity of type $i$ citizen (assume it is small enough so we can focus on interior solutions for policy choice)

- Large number of citizens within every group $i$
Vote Shares

- Fraction of type $i$ informed voters that vote for A equals probability of event that $\epsilon_i > U_i(p_B) - U_i(p_A)$:

$$\sigma_i [b_i + \frac{1}{2\sigma_i} - U_i(p_B) + U_i(p_A)] = \frac{1}{2} + \sigma_i b_i + \sigma_i [U_i(p_A) - U_i(p_B)]$$

- Fraction of $i$ uninformed voters that vote for A equals probability of event that $\epsilon_i > 0$:

$$\frac{1}{2} + \sigma_i b_i$$

- Fraction $\tau_i$ of either type turn out to vote; total votes cast $\sum_j \alpha_j \tau_j$

- Vote share of A:

$$v_A = \frac{1}{\sum_j \alpha_j \tau_j} \sum_i \alpha_i \tau_i \left[ \frac{1}{2} + \sigma_i b_i + \lambda_i \sigma_i \{U_i(p_A) - U_i(p_B)\} \right]$$
Introduction

Conditions for Ideal Democracy

Proposition

Suppose turnout, information and swing propensity do not vary across groups \((\tau_i = \tau, \lambda_i = \lambda, \sigma_i = \sigma \text{ for all } i)\). Then both candidates will have a dominant strategy to select the first-best utilitarian optimal policy \(p^*\).
Proof of Proposition 1

- Candidate A’s objective is to maximize \( \frac{1}{\sum_j \alpha_j \tau_j} \sum_i \alpha_i \tau_i \lambda_i \sigma_i U_i(p_A) \), no matter what \( p_B \) is.

- Candidate B’s objective is to minimize \( -\frac{1}{\sum_j \alpha_j \tau_j} \sum_i \alpha_i \tau_i \lambda_i \sigma_i U_i(p_B) \), no matter what \( p_A \) is.

- So both share the same objective: maximize \( \frac{1}{\sum_j \alpha_j \tau_j} \sum_i \alpha_i \tau_i \lambda_i \sigma_i U_i(p) \) over \( P \) (Downsian convergence).

- If \( \tau_i = \tau, \lambda_i = \lambda, \sigma_i = \sigma \), this objective function reduces to utilitarian welfare \( \sum_i \alpha_i U_i(p) \).
The Proposition states a sufficient condition for democracy to achieve perfect accountability.

When this condition does not hold, both parties have the common objective function $\sum_i \omega_i U_i(p)$ where the welfare weight on group $i$ is

$$\omega_i \equiv \frac{\alpha_i \tau_i \lambda_i \sigma_i}{\sum_j \alpha_j \tau_j}$$

Consider the case of equal turnout rates across all groups $\tau_i = \tau$, and equal proportions of informed voters $\lambda_i = \lambda$, but different swing propensities $\sigma_i$.

Then $\omega_i = \alpha_i \sigma_i$.

Groups with higher swing propensity $\sigma_i$ get higher welfare weight relative to utilitarian objective.
Pork Barrel Politics (Dixit-Londregan 1996)

- Pork-Barrel politics: term in US politics for specific regions that get more projects than they need, as an implicit subsidy at the expense of other regions
- Groups with higher swing propensity get disproportionately favored
- *Intuition:* groups with high $\sigma_i$ place greater weight on policy issues relative to candidate characteristics $\rightarrow$ they respond more in their votes to a unit increase in policy-based utility
- Recall expression for vote share of A among informed voters from group $i$:

$$\sigma_i [b_i + \frac{1}{2\sigma_i} - U_i(p_B) + U_i(p_A)] = \frac{1}{2} + \sigma_i b_i + \sigma_i [U_i(p_A) - U_i(p_B)]$$
Uneven swing propensities can be one possible source of pork-barrel politics.

Other sources: groups with low ($\tau_i$) voter turnout rates, and with low ($\lambda_i$) levels of political awareness, will also get discriminated against.

For a similar reason: they respond less with votes to increases in policy-based utility.

One reason suggested for anti-poor bias in US politics: lowest 20% of the population have substantially lower rates of political participation and awareness (Rosenstone and Hansen 1993).
Imperfection #2: Lobbies and Elite Capture (Grossman-Helpman 1996)

- One form of elite capture arises if elite is more politically aware and turnout more to vote than other groups (Benabou AER 2000)

- Additional channel: elites can form lobby that make contributions to candidate campaign funds

- Campaign funds are used by candidates to spend on campaign advertising, which affect votes of the uninformed
Lobbies, Campaign Funds and Ads

- Abstract from differences in turnout, awareness and swing propensity between groups: $\sigma_i = \sigma, \tau_i = \tau, \lambda_i = \lambda$ so in the absence of lobbying the first-best welfare will be realized.

- Elite group $e$ which is wealthy, and well connected with candidates, forms a lobby which suggests policy $p_k$ to candidate $k = A, B$ and offers funds $C_k \geq 0$ if candidate $k$ selects $p_k$ (instead of $p^*$).

- What can candidate $k$ do with funds $C_k$ — purchase political ads which affect voting of uniformed voters (only).

- Uninformed voters in group $i$ vote for A if $h.C_A + \epsilon_i > h.C_B$ where $h$ is relative weight on ads (‘persuasion’ parameter).
Vote Shares with Campaign Ads

- Fraction of uninformed voters in group $i$ that vote for $A$ is now 
  \[ \frac{1}{2} + \sigma b_i + h(C_A - C_B) \]
- Vote share of $A$ is modified to
  \[ v_A = \frac{1}{2} + \sigma \sum_i \alpha_i b_i + \]
  \[ + \sigma \sum_i \alpha_i [\lambda \{U_i(p_A) - U_i(p_B)\} + (1 - \lambda) h\{C_A - C_B\}] \]

- Party $A$ objective: maximize \( \sum_i \alpha_i U_i(p_A) + \chi C_A \) where \( \chi \equiv \frac{h(1-\lambda)}{\lambda} \) is relative weight on campaign finance
- Party $B$ objective: maximize \( \sum_i \alpha_i U_i(p_B) + \chi C_B \)
- Elite group objective: \( hi(v_A)U_e(p_A) + (1 - hi(v_A))U_e(p_B) - C_A - C_B \)
Lobbying Game

1. Lobby representing e group offers $p_k, C_k$ to candidate $k = A, B$

2. Candidates respond: accept or reject

3. Candidates that accept are committed to policy recommended by lobby, those that reject select a policy platform

4. Citizens vote, votes counted, winner declared
Solution to Lobbying Game

- Work backwards from stage 3: candidate that rejects lobby offer will select $p$ to maximize $\sum_i \alpha_i U_i(p) \rightarrow$ select welfare optimal policy $p^*$

- Stage 2: candidate $k$ will accept lobby offer if and only if $\sum_i \alpha_i U_i(p_k) + \chi C_k \geq \sum_i \alpha_i U_i(p^*)$, i.e.:

$$C_k \geq \underline{C}_k \equiv \frac{1}{\chi} \sum_i \alpha_i [U_i(p^*) - U_i(p_A)] \quad (1)$$

- Observe that $C_k \geq 0$
Stage 1: Elite e selects $p_A, p_B, C_A, C_B$ to maximize

$$hi(v_A)U_e(p_A) + (1 - hi(v_A))U_e(p_B) - C_A - C_B$$

subject to

$$C_k \geq C_k, k = A, B$$

and expression for vote share $v_A$ as a function of $p_A, p_B, C_A, C_B$
If the candidate acceptance constraints are binding (*pure influence motive*):

\[ C_k = C_k \equiv \frac{1}{\chi} \sum_i \alpha_i [U_i(p^*) - U_i(p_A)] \quad (2) \]

and vote shares are unaffected by lobbying

\[ \nu_A = \frac{1}{2} + \sigma \sum_i \alpha_i b_i \equiv \bar{\nu}^A \quad (3) \]

If candidate A is intrinsically more popular, \( \sum_i \alpha_i b_i > 0 \), will win with probability \( \bar{h}_i^A \equiv h_i(\bar{\nu}^A) > \frac{1}{2} \) both with and without lobbying.
Solution to Lobbying Game, contd.

If only influence motive operates, elite’s payoff reduces to:

\[
\begin{align*}
\bar{h}^i A U_e(p_A) &+ (1 - \bar{h}^i A) U_e(p_B) - \frac{C_A - C_B}{\chi} \\
&= \bar{h}^i A U_e(p_A) + (1 - \bar{h}^i A) U_e(p_B) - \frac{1}{\chi} \sum_i \alpha_i [U_i(p^*) - U_i(p_A)] \\
&\quad - \frac{1}{\chi} \sum_i \alpha_i [U_i(p^*) - U_i(p_B)] \\
&= [\bar{h}^i A U_e(p_A) + \frac{1}{\chi} \sum_i \alpha_i U_i(p_A)] \\
&\quad + [(1 - \bar{h}^i A) U_e(p_B) + \frac{1}{\chi} \sum_i \alpha_i U_i(p_B)] + K
\end{align*}
\]
Solution to Lobbying Game, contd.

Proposition

If only influence motive operates, solution to the lobbying game is as follows:

(i) $p_a$ is chosen to maximize $\sum_i \alpha_i U_i(p) + \chi h^A U_e(p)$

(b) $p_b$ is chosen to maximize $\sum_i \alpha_i U_i(p) + (1 - \chi h^A) U_e(p)$
Implications

- Extra weight attached to elite’s payoff by both parties — *Elite Capture*

- *Policy Divergence* — more popular party (A) is subject to more capture! (since $\bar{h}^A > \frac{1}{2}$)
Determinants of Elite Capture

- **Lack of Competition**: If election is not close (candidate A is much more popular, $\bar{h} \cdot A$ is large), this candidate is more subject to elite capture and more likely to win.

- **Lack of Political Awareness**: Extra weight on elite payoff depends on $\chi \equiv \frac{h(1-\lambda)}{\lambda}$, which is high if $\lambda$, proportion of informed voters, is low.

- **Effectiveness of Political Advertising**: $\chi$ is high if $h$ is high.
Other Sources of Elite Capture

- If political awareness or participation is increasing in education/wealth → poor groups are less aware and participate less in voting → direct impact on pro-rich bias, even in the absence of any lobbying (Benabou 2000)

- Lobbying can compound this effect

- Lack of extension of franchise to the poor in various ways:
  - Historical and contemporary instances of lack of democracy (elites control policy directly)
  - Partial franchise for males, whites, those above a certain wealth etc in UK, US (Jim Crow laws) and Latin America until the 20th century
  - Voter registration rules, lack of electronic ballots (Brazil; Fujiwara (2015))
Link between Elite Capture and Inequality

- Higher inequality in wealth implies greater gap in awareness/participation between poor and rich, resulting in direct impact on pro-rich bias.

- Compounded in the presence of lobbying: if political awareness is concave (and increasing) in education/wealth, average proportion of aware voters is decreasing in inequality, raising $\chi$ and hence elite capture.