Comparative Politics

Political Economics: Week 4

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Agenda Manipulation

- Majority voting within a committee or legislature.
- No Condorcet winner: how are cycles resolved?
- Our definition of majority rule included an open agenda
- With a *restricted agenda* any alternative in the Pareto set may be an eventual outcome.
- An *agenda setter* can pre-select the eventual outcome by controlling which policies are voted on an in which order.

A Chaos Theorem

- I members of the legislature.
- Multidimensional policy $\mathbf{q} \in Q \subseteq \mathbb{R}^N$
- Euclidean preferences: $W_i(\mathbf{q}) = -\left\|\mathbf{q} - \mathbf{q}^i\right\| \approx -\sum_{n=1}^N \left(q_n - q_n^i\right)^2$.

Theorem (McKelvey, 1976)

Assume $N \geq 2$, $I \geq 3$ and all voters have Euclidean preferences. If there is no Condorcet winner, then for any $q, q' \in Q$, it is possible to find a sequence of alternatives $\left\{\mathbf{q}^0, \mathbf{q}^1, \dots, \mathbf{q}^I\right\}$ with $\mathbf{q}^0 = \mathbf{q}$ and $\mathbf{q}^I = q'$, such that for all $0 \leq k \leq I-1$, $\mathbf{q}^{k+1}$ is preferred to $\mathbf{q}^k$ by a majority of members.

- Anything goes with sincere voting. Similar results with different assumptions.

Agenda Manipulation with Strategic Voting

- Three agents $i \in \{1, 2, 3\}$ and three choices $\{q_A, q_B, q_C\}$.
- Preferences $q_A \succ_1 q_B \succ_1 q_C$, $q_B \succ_2 q_C \succ_2 q_A$, and $q_C \succ_3 q_A \succ_3 q_B$.
- As the agenda-setter, agent 1 can get q_A enacted through the following pairwise elimination procedure:
  1. Vote over the pair (q_A, q_C).
  2. The winner of the first vote is compared to q_B; the winner of the second vote is enacted.
- In the final vote, everyone votes sincerely.
  - If the second comparison is (q_A, q_B), q_A is enacted.
  - If the second comparison is (q_B, q_C), q_B is enacted.
- In the first round, agent 3 strategically votes for q_A over his ideal policy q_C, to avoid the eventual victory of his least preferred alternative q_B.

Legislative Bargaining

- The preferences $W_i(q)$ of each member are taken as given.
  - One interpretation is that each member represents a homogeneous district.
- Equivalent to a bargaining game, but with $I \geq 3$ players.
- One member is randomly selected as the agenda setter a and makes a proposal.
- If a majority supports the proposal, it is enacted.
  - In equilibrium, the first proposal is such that it is accepted.
- In the full-fledged version of the model, bargaining can go on indefinitely, but delays are costly.
- Following Persson and Tabellini (2000) we will consider finite-horizon simplifications, which convey the same fundamental insights.

One-Round Bargaining

- If the first proposal q^a is not approved, a default policy $\bar{q}$ is implemented.
- The default gives each member utility $\bar{W}_i = W_i(\bar{q})$.
- The agenda setter needs to form a *minimum winning coalition*, i.e., to identify the other members whose support he can gain by deviating as little as possible from his ideal policy:

$$q^a = \arg\max W_a(q) \ \text{ s. t. } \#\left(i : W_i(q) \geq \bar{W}_i\right) \geq \frac{I}{2}.$$

- Each agenda-setter includes those members whose preferences are closest to his own.

$\Rightarrow$ The identity of the minimum winning coalition is uncertain ex ante.

- Agenda setting is the more valuable, the worse the default $\bar{q}$ is (for others).

The Power of the Middle Ground

- A one-dimensional policy and single-peaked preferences.
- Three members with bliss point $q_L < q_M < q_R$.
- If M is the agenda setter, he can get q_M by the median-voter theorem.
- If L is the agenda setter his minimum winning coalition is certainly (L, M):

$$q^L = \arg\max W_L(q) \text{ s.t. } W_M(q) \geq W_M(\bar{q}).$$

- Letting

$$\tilde{q}_M : W_M(\tilde{q}_M) = W_M(\bar{q}),$$

  L's optimal policy proposal is

$$q^L = \begin{cases} q_L & \text{if} \quad \bar{q} \leq q_L \\ \bar{q} & \text{if} \quad \bar{q} \in (q_L, q_M] \\ \max\{q_L, \tilde{q}_M\} & \text{if} \quad \bar{q} > q_M \end{cases}.$$

Two-Round Bargaining

1. The first agenda setter a_1 makes a proposal, which is implemented if a majority supports it.
2. If the first proposal has been rejected, each member has probability π_i of becoming an agenda setter. The second agenda setter a_2 makes a proposal, which is implemented if a majority supports it.
3. If both proposals have been rejected, the default $\bar{g}$ is implemented.

- Each agent derives utility $W_i(q)$ from a policy implemented in the first round, and $\beta_i W_i(q)$ from a policy implemented in the second round, with $\beta_i \leq 1$
- The second-stage game is identical to the one-period model considered before. Expected payoffs are:

$$\mathbb{E} W_i\left(q_2^{a_2}\right) = \sum_{j=1}^{I} \pi_j W_i\left(q_2^j\right).$$

Backwards Induction

- If $\bar{q} \leq q_L$ or $\bar{q} \geq q_R$, then $q_2^{a_2} = q_{a_2}$.
- If $L = a_1$, he can form a coalition with M by proposing

$$q_1^L = \arg\max W_L(q) \text{ s.t. } W_M(q) \geq \beta_M \sum_{j=1}^{I} \pi_j W_M(q_j).$$

- The Condorcet winner is implemented if and only if $\beta_M \pi_M = 1$, i.e., if M is guaranteed of being the agenda-setter.
- For all $\beta_M \pi_M < 1$, if $L = a_1$ then $q_1^L \in [q_L, q_M)$ is implemented.
  - q_1^L is increasing in β_M and π_M and decreasing in q_R.
- If $\beta_R \pi_R \ll \beta_M \pi_M$, L's minimum winning coalition can be with R.

Bargaining over Local Public Goods

- An odd number $I \geq 3$ of districts.
- Residents of district i have homogeneous utility

$$W_i\left(g\right) = 1 - \sum_{j=1}^{I} \lambda_j g_j + H\left(g_i\right).$$

- One-round bargaining with a *closed rule.*

1. Representative a makes a policy proposal g, which is implemented if it is supported by at least $\left(I-1\right)/2$ other members of the legislature.
2. If a's proposal g is rejected, a default $\bar{g}$ is implemented instead.

- The identity of a is not microfounded.
- Each legislator i is willing to support any g such that

$$W_i\left(g\right) \geq W_i\left(\bar{g}\right) \Leftrightarrow H\left(g_i\right) - H\left(\bar{g}_i\right) - \sum_{j=1}^{I} \lambda_j \left(g_j - \bar{g}_j\right) \geq 0.$$

Forming a Minimum Winning Coalition

- The agenda setter's problem coincides with the choice of a minimum winning coalition $\mathcal{M}$.

1. The size of the coalition is sufficient for the proposal to be implemented by majority rule:
$$\#\mathcal{M} = \frac{I-1}{2}.$$
2. Public goods are not provided to any district outside the coalition:
$$g_i = 0 \text{ for all } i \notin \mathcal{M} \cup \{a\}.$$
3. Each coalition member is just as well off with the proposal as with the default:
$$H(g_i) - H(\bar{g}_i) = \sum_{j \in \mathcal{M} \cup \{a\}} \lambda_j (g_j - \bar{g}_j) \text{ for all } i \in \mathcal{M}.$$
4. The agenda setter gets all the surplus.

Satisfying a Minimum Winning Coalition

- For a given coalition $\mathcal{M}$, a's optimal proposal solves

$$\max_{\mathbf{g} \gg \mathbf{0}} \left\{ H(g_a) - \sum_{j \in \mathcal{M} \cup \{a\}} \lambda_j g_j \right\}$$

subject to

$$H(g_i) - H(\bar{g}_i) = \sum_{j \in \mathcal{M} \cup \{a\}} \lambda_j (g_j - \bar{g}_j) \text{ for all } i \in \mathcal{M}.$$

- Let μ_i be the Lagrange multiplier for each member $i \in \mathcal{M}$. The first-order conditions are

$$\begin{cases} H'(g_a) - \lambda_a \left(1 + \sum_{j \in \mathcal{M}} \mu_j\right) = 0 \\ \mu_i H'(g_i) - \lambda_i \left(1 + \sum_{j \in \mathcal{M}} \mu_j\right) = 0 \text{ for all } i \in \mathcal{M} \end{cases}.$$

Satisfying a Minimum Winning Coalition

- The first-order conditions can be solved for

$$\mu_i = \frac{\lambda_i H'(g_a)}{\lambda_a H'(g_i)} \text{ for all } i \in \mathcal{M}.$$

- The optimality condition is therefore

$$H'(g_a) = \frac{\lambda_a}{1 - \sum_{j \in \mathcal{M}} \frac{\lambda_j}{H'(g_j)}}.$$

- The right-hand side is the minimum tax rate that a can set in a proposal that delivers g_a while convincing $\mathcal{M}$ to support it against $\bar{g}$.
- a's optimal proposal to $\mathcal{M}$ is fully described by the last equation and the $(I-1)/2$ participation constraints.

Choosing a Minimum Winning Coalition

- a chooses the $(I-1)/2$ cheapest coalition members, who are characterized by:

1. A smaller district population λ_i, so any amount of public goods per capita they desire is cheaper to provide.
2. A lower default level $\bar{g}_i$, so they are satisfied by a less generous proposal because they dislike the outside option.

- In two-player bargaining, a higher outside option means more bargaining power. That remains locally true for the members of $\mathcal{M}$; but globally a higher $\bar{g}_i$ tends to imply that a district remains outside the coalition and has zero bargaining power.
- In a more general model, members of $\mathcal{M}$ would also be more impatient, have a lower chance of becoming agenda setters, and care more about public consumption.

Inefficiency of Legislative Bargaining

- Excluded districts get no public goods, which is grossly suboptimal.
- Included districts get more than the optimum on average:

$$\textstyle\sum_{j\in\mathcal{M}\cup\{a\}}\lambda_j\left[1-\frac{1}{H'(g_j)}\right]=-\displaystyle\sum_{j\notin\mathcal{M}\cup\{a\}}\lambda_j<0.$$

- The average disparity is the greater, the fewer voters are represented by a winning coalition (the larger $\sum_{j\notin\mathcal{M}\cup\{a\}}\lambda_j$).
- The distribution of surplus within $\mathcal{M}\cup\{a\}$ depends on the curvature of $H(.)$ and on parameters, most obviously on $\bar{g}$.
  - The agenda setter a gets a greater share of the surplus for infrastructure projects ($\bar{g}=0$) than entitlement projects ($\bar{g}>0$).
- No unambiguous bias to the overall level of spending.
  - If $H'(0)=\infty$ the average marginal distortion is nil: $\sum_{i=1}^{I}\frac{\lambda_i}{H'(g_i)}=1$.
  - If $H(g)=\alpha\log g$ the average level of spending is optimal too.

The Value of Proposal Power

Knight (2005) investigates earmarked transportation projects.

- \$5 billion in 1991 and \$8 billion in 1998, allocated to specific projects in electoral districts through a highly political process.
- U.S. House members sitting on the Transportation and Infrastructure committee secure higher spending in their own districts: \$55 v. \$6 million in 1991 and \$38 v. \$14 million in 1998.
- Controlling for
  1. District characteristics: more urban districts get fewer funds.
  2. Partisan affiliation: belonging to the majority party does not matter.
  3. Information: belonging to the Surface Transportation subcommittee does not matter.
  4. Turf wars: belonging to the Transportation Appropriations subcommittee does not matter.
- Addressing the potential endogeneity of committee members:
  1. Fixed effects at the state or at the district level
  2. IV: newly elected members are more likely to sit on the committee.

Elections and Legislative Bargaining

- The default allocation is $\bar{g} = 0$.
- All districts have identical size $\lambda_i = 1/I$ and a representative voter with utility

$$W_i(g) = H(g_i) - \frac{1}{I}\sum_{j=1}^{I} g_j.$$

- Every district simultaneously elects a representative.
- Voters can choose among candidates with no commitment device and heterogeneous preferences

$$W_{i,\alpha}(g) = \alpha H(g_i) - \frac{1}{I}\sum_{j=1}^{I} g_j,$$

for $\alpha \in [\alpha_L, \alpha_U]$.
- Each of the elected representatives has an equal probability of being the agenda setter.

Strategic Delegation

- Any agenda setter will form a coalition of the $(I-1)/2$ representatives with the highest value of α, because their keenness on public goods makes them easy to please.
- In a subgame-perfect Nash equilibrium, all districts elect the most spendthrift candidate α_U.
- This gives them a 50% chance of receiving public goods when their representative is not the agenda setter.
- If a district elected any other candidate, its chance of being included in a minimum winning coalition would drop to zero.
- There is a price to pay: with probability $1/I$, the district's own spendthrift representative is the agenda setter and sets taxes higher than its constituents would like.
- The spendthrift equilibrium is assured if the number of districts I is high enough.

Lobbying and Legislative Bargaining

- The same symmetric model as before.
- Rent-seeking representatives instead of policy-seeking representatives.

1. The agenda setter a is randomly chosen.
2. Each district acts as a lobby that offers to its own district's representative two contribution schedules: $C_i^y(g)$ if he supports proposal g and $C_i^n(g)$ if he opposes it.
3. Legislator a makes a proposal, which is adopted if a majority supports it; otherwise the default $\bar{g} = 0$ is implemented.

- Strong, crucial, arbitrary assumption: each group can only lobby the representative from its own district.

Bertrand Competition

Theorem (Helpman and Persson 2001)

In every equilibrium the allocation equals the agenda setter's proposal

$$g_a^a : H'\left(g_a^a\right) = \frac{1}{I} \text{ and } g_i^a = 0 \text{ for all } i \neq a$$

and all contributions equal zero $\left(C_i^y\left(g^a\right) = C_i^n\left(g^a\right) = 0\right)$.

- Suppose a group were paying non-zero contributions in equilibrium: then it could shift down its entire schedule, leaving marginal incentives unchanged while saving money.
- Suppose any lobby induced its representative to demand $g_i > 0$ for its support. Then a would form a coalition of the $(I-1)/2$ representatives with the lowest demand g_i.
- The groups compete to be included in the minimum winning coalition by lowering their demands, and in equilibrium all accept $g_i^a = 0$.

Electoral Systems and Electoral Districts

- There is wide-ranging diversity in the methods used to elect politicians in different times, in different countries, and to different offices in the same country at the same time.
- One non-mathematical characteristic of a system is the drawing of its *electoral districts.*
- Districting is a typical feature of legislative elections:
  - In the United Kingdom: 646 districts electing a single MP each.
  - In the Netherlands: a single districts electing 150 representatives.
  - In Spain: 52 districts electing from 1 to 35 deputies each.
- Districting schemes affect representativeness, sometimes notoriously:
  - British "rotten boroughs" until 1832.
  - Prussian three-class franchise until 1918.
  - U.S. gerrymandering today.
- The U.S. also elect the President through a multi-district Electoral College (cf. Strömberg 2008).

Single-Winner Voting Systems

- By far the most widespread single-winner method is simple *plurality.*
- Two common twists to this system involve *sequential* voting:
  1. *Primaries* can be used to select the candidates that will contest the general election.
  2. A *run-off* election may be held to choose between the top candidates if none obtained a majority of votes in the first round.
- The more complex method of *ranked voting* requires each voter to submit an ordering of all the candidates.
  - The *Borda count* is used to fill two seats in the Slovenian parliament reserved for ethnic minorities.
  - *Instant-runoff voting* is used more commonly, e.g., for the Australian House of Representatives and for the President of Ireland.
- In *rated voting* methods electors give each candidate a score. No political election currently uses such a method.

Multiple-Winner Voting Systems: Proportional

- Multiple-seat electoral districts are commonly associated with *party-list proportional representation*, in which votes are cast for a party instead of a candidate.
  - The actual allocation of seats is never exactly proportional, and there are several ways of dealing with remainders.
  - Minimum thresholds are common; other complications are rarer.
- A *closed list* ranks candidates in the order selected by the party.
- An *open list* ranks candidates in the order selected by the voters.
  - There are several ways of implementing open lists.
- The *single transferable vote* is a ranked voting procedure that nests instant runoff. It is prevalent in Ireland, Malta, and Australia.
  - The implementation requires specifying the exact quota of votes needed for election, and a mechanism for transferring leftover votes. Various choices exist, especially for the latter.

Multiple-Winner Voting Systems: Non Proportional

- The opposite of proportional representation is *block voting*, in which each voter selects as many candidates as there are seats, and the candidates with the most votes win. It is used for the Polish Senate.
  - $\Rightarrow$ Each district normally selects a homogeneous slate of candidates.
- An intermediate solution is *partial block voting*: to fill n seats, each voter gets $m < n$ votes. This is used for the Spanish Senate.
  - Each party can field m candidates. What can happen otherwise?
  - A closed-list version of this system is used for the Argentine Senate: 2 seats go to the plurality party and 1 to the runner-up.
- The *single non-transferable vote* is the case $m = 1$.
  - This method was characteristic of Japan and Taiwan, but has been largely abandoned. It is used in Afghanistan.
  - It offers especially high and obvious rewards to strategic voting.
  - The coordination problem allegedly promotes clientelism.

Electoral Systems and Economic Policy

- Three groups of voters $j \in \{1, 2, 3\}$ with mass $1/3$ each and preferences
$$W_j = 1 - \tau + f_j + H(g).$$
- Government budget constraint
$$\tau = \sum_{j=1}^{3} f_j + g + r.$$
- $f_j \geq 0$ is a group-specific transfer.
- $g \geq 0$ is the supply of a global public good.
- $r \geq 0$ is a rent that yields utility γr to the rent-seeking politician.
- The first best is
$$r^* = 0 \text{ and } g^* : H'(g^*) = 1.$$

Probabilistic Voting

- Two parties A and B contest an election by committing to platforms q^A and q^B.
- Voter i in group j votes for party A if

$$W_j\left(q^A\right) > W_j\left(q^B\right) + \delta + \sigma_{i,j}$$

- The common popularity shock is

$$\delta \sim U\left[-\frac{1}{2\psi}, \frac{1}{2\psi}\right].$$

- Individual ideology has group-specific distribution

$$\sigma_{i,j} \sim U\left[\bar{\sigma}_j - \frac{1}{2\phi_j}, \bar{\sigma}_j + \frac{1}{2\phi_j}\right]$$

Ideological Differences

- Group 1 is ideologically biased towards party A and group 3 towards party B:

$$\bar{\sigma}_1 < \bar{\sigma}_2 = 0 < \bar{\sigma}_3.$$

- The ideologically neutral group 2 also has less ideological members:

$$\phi_2 > \max\{\phi_1, \phi_3\}.$$

- This setup replicates with uniform distributions our natural intuition based on bell-shaped densities.
- There is no average ideological bias:

$$\bar{\sigma}_1\phi_1 + \bar{\sigma}_3\phi_3 = 0.$$

From Votes to Victory

- Given δ, candidate A' share of the vote in group j is

$$\pi_{A,j}(\delta) = \frac{1}{2} + \phi_j \left[W_j\left(q^A\right) - W_j\left(q^B\right) - \bar{\sigma}_j - \delta \right].$$

- Politician $P \in \{A, B\}$ maximizes

$$\mathbb{E} W_P = p_P \left(R + \gamma r_P\right).$$

- The electoral system determines how p_A depends on the $\mathbb{E}\pi_{A,j}(\delta)$.

1. Proportional representation, *or* single-district presidential election.
2. First-past-the-post, *or* the U.S. Electoral College.

Single-District Elections

- A party wins by obtaining a majority of the popular vote

$$p_A = \Pr\left(\frac{1}{3}\sum_{j=1}^{3}\pi_{A,j}(\delta) > \frac{1}{2}\right).$$

- With a uniform distribution of δ and no average partisan bias

$$p_A = \frac{1}{2} + \psi\sum_{j=1}^{3}\frac{1}{3}\frac{\phi_j}{\bar{\phi}}\left[W_j\left(q^A\right) - W_j\left(q^B\right)\right],$$

where $\bar{\phi}$ as usual denotes the average value of ϕ_j.

- Our general model of probabilistic voting: for any group sizes λ_j, lobbying abilities ξ_j, and information $\theta_j^A = \theta_j^B = \theta_j$,

$$p_A = \frac{1}{2} + \psi\sum_{j=1}^{J}\lambda_j\left(\frac{\phi_j}{\bar{\phi}}\theta_j + \xi_j\right)\left[W_j\left(q^A\right) - W_j\left(q^B\right)\right].$$

Linear Programming

- The problem is symmetric, so $q^A = q^B$.
- The availability of non-distortionary taxes and transfers implies $\tau = 1$.
- In general, a group's political influence is

$$\Phi_j = \frac{\phi_j}{\bar{\phi}}\theta_j + \xi_j$$

- Quasi-linear utility and uniformly distributed $\sigma_{i,j}$ imply a corner solution for transfers:

$$\Phi_2 > \max\{\Phi_1, \Phi_3\} \Rightarrow f_2 > 0 \text{ and } f_1 = f_3 = 0.$$

- Transfers to the influential group crowd-out global public goods:

$$\Phi_2 > \max\{\Phi_1, \Phi_3\} \Rightarrow H'(g) = \frac{\Phi_2}{\sum_{j=1}^{J} \lambda_j \Phi_j} > 1.$$

Rent Extraction in a Single District

- Each politician sets
$$\frac{\partial \mathbb{E} W_P}{\partial r_P} = \left(R + \gamma r_P\right) \frac{\partial p_P}{\partial r_P} + \gamma p_P = 0.$$
- By symmetry ($\mathbb{E}\delta = 0$, $\sum_j \lambda_j \phi_j \bar{\sigma}_j = 0$, $\theta_j^A = \theta_j^B$): $q^A = q^B \iff p_P = \frac{1}{2}$.
- Raising r requires reducing f_2, so the first-order condition is
$$\frac{1}{2}\gamma - \left(R + \gamma r\right) \psi \Phi_2 = 0.$$
- In an interior equilibrium rent extraction is
$$r = \frac{1}{2\psi\Phi_2} - \frac{R}{\gamma}.$$
- A more powerful group is better both at constraining the politician and at squeezing the other groups.

Multiple-District Elections

- A party wins by obtaining a majority of votes in a majority of districts.
- Each district coincides with one of the groups.
- $|\bar{\sigma}_1|$ and $\bar{\sigma}_3$ are large enough for districts 1 and 3 to be "safe" for parties A and B respectively.
- Electoral competition focuses exclusively on the competitive district

$$p_A = \Pr\left(\pi_{A,2}(\delta) > \frac{1}{2}\right) = \frac{1}{2} + \psi\left[W_2\left(q^A\right) - W_2\left(q^B\right)\right].$$

- Group 2 becomes even more pivotal, and thus even more powerful.
  1. It squeezes other groups even more. Again $\tau = 1$, $f_2 > 0$ and $f_1 = f_3 = 0$, but the supply of global public goods is further reduced:

$$H'(g) = 3 > \frac{\phi_2}{\bar{\phi}}.$$

  2. It constrains politicians even more:

$$r = \frac{1}{6\psi} - \frac{R}{\gamma} \leq \frac{\bar{\phi}}{2\psi\phi_2} - \frac{R}{\gamma}.$$

Beyond Pivotal Voters

- If we introduce imperfect information and lobbying

$$\begin{aligned} p_A &= \frac{1}{2} + \psi\theta_2 \left[W_2\left(q^A\right) - W_2\left(q^B\right) \right] \\ &\quad + \psi \sum_{j=1}^{J} \frac{1}{3} \xi_j \left[W_j\left(q^A\right) - W_j\left(q^B\right) \right]. \end{aligned}$$

- Imperfect information makes politicians less accountable:

$$r = \frac{1}{6\theta_2\psi} - \frac{R}{\gamma}.$$

- Lobbying by group 2 reduces rent extraction:

$$r = \frac{\gamma}{2\psi\left(3\theta_2 + \xi_2\right)} - \frac{R}{\gamma}.$$

- Lobbying by groups 1 and 3 increases provision of public goods:

$$H'\left(g\right) = 3\frac{3\theta_2 + \xi_2}{3\theta_2 + \sum_{j=1}^{J} \xi_j} < 3 \text{ for all } \xi_1 + \xi_3 > 0.$$

Another Route to Analogous Results

- Lizzeri and Persico (2001) give different definitions:
  1. With proportional representation politicians maximize their share of the vote.
  2. With majority rule politicians maximize the probability of winning 50% of the vote.
  3. With the electoral college politicians maximize the probability of winning 50% of the vote in 50% of the districts.
- Politicians provide a global public good or voter-specific transfers.
- Downsian competition with two office-seeking parties and a continuum of non-ideological voters.

$\Rightarrow$ No Condorcet winner: mixed-strategy equilibria.

- When the public good is valuable, proportional representation is more likely to provide it.
- Majority rule is always better than the electoral college.

Empirical Evidence on Electoral Rules

- Elections by plurality rule correlate with lower corruption, controlling for other known correlates of corruption.
  - Persson, Tabellini and Trebbi (2003): cross-section analysis of 85 democracies; average values for the 1990s.
- More controversial results on open and closed lists: inter-party competition decreasing corruption, but intra-party competition may increase it (Golden and Chang 2001).
- Plurality rule is associated with electoral cycles: taxes and spending are cut during election years.
  - Persson and Tabellini (2003): panel data for 60 democracies, 1960–1998.
- In parliamentary democracies, proportional representation is associated with higher spending on social security and welfare by up to 8% of GDP (Milesi-Ferretti, Perotti, and Rostagno 2002).
  - Persson and Tabellini (2003) estimate a marginal impact of 2% of GDP for a random country.

A Richer Model of Proportional Representation

Baron and Diermeier (2001) consider in greater detail the operation of a parliamentary system.

- Two-dimensional policy space with Euclidean preferences.
- Three parties with equidistant bliss points

Three-stage game:

1. Election with proportional representation and strategic voting.
2. Government formation with efficient bargaining.
3. The government's agenda is implemented if it has the support of a parliamentary majority.

- The status quo is the pre-existing policy.
  - Policy-making as in one-round legislative bargaining.

Government Formation and Legislation

- A random member of parliament becomes the formateur. I.e., the probability that a party forms the government is equal to its share of seats (but not of votes, with a threshold for representation).
- The formateur builds a coalition, bargaining over policies and office-holding benefits that parliament can allocated at will.
  - With any efficient bargaining process, policy is the centroid of coalition members' bliss points.
  - The distribution of perks instead depends on the status quo.
- Each formateur's minimal winning government includes the other party that most dislikes the status quo.
- A formateur forms a centrist consensus government instead of a minimal winning government only if both the other parties substantially dislike the status quo.
- Even a majority party chooses not to govern alone if some other parties dislikes the status quo enough.

Electoral Equilibria

- No policy commitment: voters see parties as instruments to determine bargaining positions in parliament.
  1. Representation: which parties have seats?
  2. Selection: how likely is each party to be the formateur?
  3. Coalition: which coalitions have a majority of seats?
- For every status quo there is a unique (mixed-strategy) strong Nash equilibrium, i.e., a unique policy that is robust to deviations by groups of voters.
- All three parties are represented in parliament, but representation does not reflect voters preferences because some voters do not vote for the party closest to their bliss point.
- Pre-election coalitions may emerge without a commitment mechanism.
- If parties and voters are myopic, only minimal winning governments form, and every election brings a change in government.

Parliamentary and Presidential Regimes

- Many-sided principal-agent problem:
  - Voters with conflicting interests elect politicians.
  - Politicians with conflicting interests determine policies.
- U.S. presidential-congressional regime:
  - Proposal power rests with multiple congressional committees.
  - The executive has a separate popular mandate.
- European parliamentary regime:
  - Proposal power rests with the cabinet.
  - The government needs the continuous confidence of parliament

$\Rightarrow$ The parliamentary system has more legislative cohesion.

Retrospective Voting

- Three groups of voters $j \in \{1,2,3\}$ with unit mass each and preferences
$$W_j(q) = y - \tau + f_j + H(g).$$
- Each group is represented by one legislator. Voters within the group coordinate on a voting strategy that depends only on their realized utility:
$$p_j(q,\omega_j) = \begin{cases} 1 & \text{if} \quad W_j(q) \geq \omega_j \\ 0 & \text{if} \quad W_j(q) < \omega_j \end{cases}.$$
- Legislator j extracts rent r_j and has utility
$$V_j(q,\omega_j) = \gamma r_j + p_j(q,\omega_j) R.$$
- Government budget constraint:
$$3\tau = \sum_{j=1}^{3} f_j + g + \sum_{j=1}^{3} r_j.$$
- The first best is
$$r_j^* = 0 \text{ for all } j \text{, and } g^* : H'(g^*) = 1/3.$$

A Simple Legislature

- A simplified, unrealistic policy-making process.

1. An agenda setter a is randomly selected.
2. Groups simultaneously and non-cooperatively set ω_j.
   - Identically, ω_j could be set first, but with a different level if the representative is selected as the agenda setter.
3. a proposes a policy vector q.
4. The legislature votes: q is enacted if at least two legislators support it; otherwise the status quo $\bar{q}$ persists, with $r_j = \bar{r} \in [0, R/\gamma]$ and $f_j = g = 0$ for all j.
5. Elections are held.

Equilibrium Conditions

1. For all ω, a's proposal $q(\omega)$ satisfies the participation constraint $V_j(q(\omega), \omega_j) \geq V_j(\bar{q}, \omega_j)$ for at least one legislator $j \neq a$.
2. For all ω, $q(\omega)$ solves $\max_q V_a(q, \omega_a)$ subject to the constraint above.
3. ω_j is optimal for the voters in group j, given the strategies of the other groups and the constraints above.
    - Voters coordinate within a group but not across groups.

- Unique subgame-perfect Nash equilibrium.

Equilibrium Policy

- Taxes are maximal: $\tau = y$.
  - With non-distortionary instruments, transfers dominate tax cuts.
- All legislators are re-elected.
  - If a group set ω_j so high that the legislator chooses not to be re-elected, it would lose its only way of influencing equilibrium policy.
- Only the agenda setter's district gets a transfer: $f_j = 0$ for all $j \neq a$.
  - The two groups engage in Bertrand competition to be included in a's minimum winning coalition.
- The public good is under-provided: $H'(g) = 1$.
  - Since re-election depends only on voters' total utility, a funds public goods and transfers to his own district so that their marginal utility to voters is equalized.
  - Assume that $H'^{-1}(1) < R/\gamma + \bar{r}$ to avoid corner solutions.

$\Rightarrow$ The voting strategy is $\omega_j = H(g)$ for $j \neq a$.

Limited Accountability

If the legislature does not seek reappointment:

- one coalition partner m gets $\bar{r}$;
- the agenda setter a gets $3y - \bar{r}$;
- the voters get $f_j = g = 0$ for all j.

If the legislature seeks reappointment:

- one coalition partner m gets $r_m = \max\{0, \bar{r} - R/\gamma\}$;
- the agenda setter a gets r_a;
- a's district gets $g = H'^{-1}(1)$ and $f_a = 3y - g - r_a - r_m$.

The minimum rent that voters must let a extract is

$$r_a = \max\{0, 3y - R/\gamma - \bar{r}\}.$$

Rent Sharing

- For $\gamma\bar{r} \leq R$, the coalition partner m gets no equilibrium rent:

$$r_j = 0 \text{ for all } j \neq a.$$

- For $3y > R/\gamma + \bar{r}$, then agenda setter a gets a positive rent

$$r_a = 3y - R/\gamma - \bar{r},$$

  which constitutes a waste or resources
- For $H'^{-1}(1) < R/\gamma + \bar{r}$, the equilibrium transfer to a's district is

$$f_a = R/\gamma + \bar{r} - g,$$

  which represents redistribution to politically powerful minorities.
- Under-provision of the public good completes the picture of inefficiency.

The Congressional Regime

- Separation of agenda-setting powers.

1. Committee chairs a_τ and a_g are randomly selected.
2. Groups simultaneously and non-cooperatively set ω_j.
3. a_τ proposes a tax rate τ.
4. Congress votes: τ is enacted if at least two legislators support it; otherwise the status quo $\bar{\tau} > 0$ persists.
5. α_g proposes expenditures subject to the budget constraint $3\tau = \sum_{j=1}^{3} f_j + g + \sum_{j=1}^{3} r_j$.
6. Congress votes: if the proposal is not approved, the status quo is $r_j = \bar{r} > 0$ and $f_j = \bar{\tau} - \bar{r} \geq 0$ for all j.
7. Elections are held.

Perfect Accountability

- Several results from the simple legislature are retained:
  - all legislators are re-elected;
  - only a_g's district gets a transfer: $f_j = 0$ for all $j \neq a_g$;
  - the public good is under-provided: $H'(g) = 1$.
- Once τ has been approved, α_g seeks re-election so long as he is given the minimum rent

$$r_{a_g}(\tau) = \max\left\{0, 3\tau - R/\gamma - \bar{r}, \bar{r} - R/\gamma\right\}.$$

- For $\gamma\bar{r} \leq R$, all politicians are held to $r_j = 0$ provided that

$$3\tau \leq R/\gamma + \bar{r}.$$

- In equilibrium, a_τ's voters demand such a low tax rate and no rent extraction occurs.

Multiple Equilibria

- Since a_g's and a_τ's districts set their demands simultaneously, there are multiple equilibria
- At one extreme, a_τ's voters prefer the equilibrium with

$$3\tau = H'^{-1}(1) \text{ and } r_j = f_j = 0 \text{ for all } j.$$

- At the opposite extreme, a_g's voter prefer the equilibrium with

$$3\tau = R/\gamma + \bar{r} \text{ and } f_{a_g} = R/\gamma + \bar{r} - H'^{-1}(1).$$

- There is a continuum of equilibria with a size of government

$$3\tau \in \left[H'^{-1}(1), R/\gamma + \bar{r}\right],$$

and redistribution to an influential minority

$$f_{a_g} \in \left[0, R/\gamma + \bar{r} - H'^{-1}(1)\right].$$

The Parliamentary Regime

- Necessity of a stable coalition.

1. Cabinet ministers a_τ and a_g are randomly selected.
2. Groups simultaneously and non-cooperatively set ω_j.
3. a_τ proposes a tax rate τ.
4. α_g proposes expenditures subject to the budget constraint $3\tau = \sum_{j=1}^{3} f_j + g + \sum_{j=1}^{3} r_j$.
5. Either minister can trigger a government crisis; then a subgame leads to the default outcome

$$\bar{g} = H'^{-1}(1), \; f_j = 0, \; \bar{r}_j = \frac{1}{3}\left(3y - R/\gamma - \bar{r}\right) \text{ for all } j$$

   and re-election of the entire legislature.
6. If no crisis has occurred, government policy is implemented and then elections are held.

Rent-Seeking by a Coalition

- The identity of the coalition is known since the beginning.
- Different results from the simple legislature are retained:
  - all legislators are re-elected;
  - taxes are maximal: $\tau = y$.
- If the government foregoes re-election, a_g distributes rents

$$\tilde{r}_{a_\tau} = R/\gamma + \bar{r}_j \text{ and } \tilde{r}_{a_g} = 3y - R/\gamma - \bar{r}_j$$

- The minimal rents consistent with the government seeking re-election are

$$r_{a_\tau} = \bar{r}_j \text{ and } r_{a_g} = 3y - 2R/\gamma - \bar{r}_j$$

- For $\gamma \bar{r} \leq R$, total rent extraction is lower than in the simple legislature, but it is always positive.

Broad-Based Government

- Again, multiple equilibria due to simultaneous moves.
- Typically, a majority of citizens shares transfers:

$$f_{a_g} > 0 \text{ and } f_{a_\tau} > 0 \text{ such that } f_{a_g} + f_{a_\tau} = 2\frac{R}{\gamma} - g.$$

- Public goods are then provided to benefit the majority:

$$2H'(g) = 1.$$

- There exist equilibria in which only one district receives transfers

$$f_{a_g} f_{a_\tau} = 0 \text{ and } f_{a_g} + f_{a_\tau} = 2\frac{R}{\gamma} - g.$$

- Then the weaker district must be at least as satisfied as with a government crisis. Since taxes are higher under the coalition, provision of public goods is unambiguously higher too:

$$H'(g) \in [1/2, 1).$$

Empirical Evidence on Forms of Government

Mixed evidence on accountability (Persson and Tabellini 2003):

- In "good" democracies, presidential regimes are associated with less corruption.
- In "bad" democracies, the result does not hold.
- The sample of "good" presidential regimes is small.
- Different classifications get more corruption in presidential regimes.

Stronger evidence on spending:

- Proportional systems with coalition governments increase expenditure by 5% of GDP (Persson, Roland, and Tabellini 2003) and budget deficits by 2% of GDP (Persson and Tabellini 2003).
- Presidential-congressional systems decrease spending by 5% of GDP.
- The form of government also correlates with the prevalence of left-wing governments (Ticchi and Vindigni 2003).