

# Political Economy

## Lecture 1: From social choice to political economy

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## 1 Introduction

What's political economy?

General questions

# What's political economy?

- Defining political economy by its objects: The study of the **interrelationship** between **economics** and **politics**.
- Defining political economy by its tools: The application of (standard) tools of **economic analysis** to **politics**.
  - Formal modeling of politics (optimization, constraints, incentives, etc.).
  - Econometrics and statistical methods to analyze observed patterns.

*“Economics is science which studies human behavior as a relationship between ends and scarce means that have alternative uses.”*  
Robbins (1932)

- Many decisions are collective. Politics, i.e. the exercise of power and authority, is the way do take such decisions.
- Political economy studies how a society takes **collective decisions** when individuals have **conflicting preferences**.

*“It is heterogeneity of interests that is the basis of [. . .] political economy.”*  
Drazen (2000)

- Heterogeneity of preferences within a society: → Voting, design of **institutions**, elections, etc.
- Heterogeneity of preferences between principals and agents: → Politicians respond to incentives.
  - A **welfare economics** question: What is the optimal allocation that maximizes a given social welfare function?
  - A classical **public economics** question: How taxes and public expenditures can be used to achieve the socially optimal allocation?
- Both approaches assume the existence of a **benevolent social planner** that maximizes **social welfare**.
- But optimal policies are often **not** implemented and policy makers may **not** (only) be concerned with social welfare.

## General questions

- A common way to aggregate preferences is through voting to elect a leader who will be in charge of policies for some time.
- Politicians are potential leaders who compete to be elected (or use force . . . ) to get power and authority.
- Questions:
  - How do elections **select** politicians?
  - Are elected politicians' policy choices **aligned** with voters preferences?

## 2 Collective choices in the social choice theory

- General framework

- Arrow's impossibility theorem

- Majority rule

- Median voter theorem



## General framework

- An economy is made of a finite set of  $N$  individuals—indexed by  $i = 1, \dots, N$ —affected by a vector of policies  $q$ .
- Individual  $i$ 's utility function is:

$$U(x_i, q, p(q)|\alpha_i),$$

where  $x_i$  is the vector of choice variables,  $q$  is the vector of policies,  $p$  is the vector of market-determined variables, and  $\alpha_i$  is the vector of idiosyncratic characteristics (e.g. endowments, preferences).

- Each agent has a unique optimal action:

$$x_i^*(q, p(q), \alpha_i) = \arg \max_{x_i} U(x_i, q, p(q) | \alpha_i).$$

- And so, an indirect utility function exists:

$$W(q, \alpha_i) \equiv U(x_i^*, q, p(q) | \alpha_i).$$

- Even if individual  $i$  has no (direct) control on  $q$ , its preferred policy—a.k.a. *bliss point*—exists and can be defined as:

$$q(\alpha_i) = \arg \max_q W(q, \alpha_i).$$

- Each individual  $i$  has a preference ordering over alternatives such that:
  - $q \succ_i \tilde{q}$  if individual  $i$  strictly prefers  $q$  to  $\tilde{q}$ ;
  - $q \succsim_i \tilde{q}$  if individual  $i$  (weakly) prefers  $q$  to  $\tilde{q}$ ;
  - $q \sim_i \tilde{q}$  if individual  $i$  is indifferent between  $q$  and  $\tilde{q}$ .
- Individual preference orderings have the following properties:
  - Completeness;
  - Transitivity.

- Main question:
  - Is it possible to find a general way to aggregate individual preference orderings into a social preference ordering? I.e. how can we take collective decisions?

- Restrictions we would like to impose:
  - 1 **Unrestricted domain:** The decision rule must apply to all logically conceivable preferences.
  - 2 **Weak Pareto principle:** If all individuals prefer  $q$  to  $\tilde{q}$ , then  $q$  must be collectively preferred to  $\tilde{q}$ .
  - 3 **Independence of irrelevant alternatives:** The social ranking  $q$  and  $\tilde{q}$  must only depend upon individual rankings of  $q$  and  $\tilde{q}$ .
  - 4 **Collective rationality:** The social ranking must be a complete, transitive (and reflexive) ordering.
  - 5 **Non-dictatorship:** Social choices must not exactly reflect a single individual's preferences regardless of the preferences of others.

## Arrow's impossibility theorem

*There does not exist any collective decision function that satisfies restrictions 1–5. Arrow (1951)*

Or,

*If a social ordering is transitive, weakly Paretian and satisfies independence from irrelevant alternatives, it must be dictatorial.*

## Escape out of Arrow's impossibility theorem

- We need a collective decision rule.
- So, we need to give up on some restrictions (not non-dictatorship!).
- How to proceed?
  - Restrict admissible preferences and/or goal of collective rationality.
  - A popular rule is majority rule (simple, easily implementable).

## Majority rule

- $q$  is collectively preferred to  $\tilde{q}$  if the number of individuals who prefer  $q$  over  $\tilde{q}$  is higher than the number of individuals who prefer  $\tilde{q}$  over  $q$ .
- Further restrictions:
  - 1 **Direct democracy**: Individuals vote directly on policy options.
  - 2 **Sincere voting**: When facing two alternative options, each individual vote for the one that provides him with the highest utility according to its preferences (i.e. there is no strategic voting).
  - 3 **Open agenda**: If there are more than 2 alternatives, individuals vote over pairs of alternatives and the winning option in one round is posed against a new alternative in the next round.



- Three individuals, three choices.

	Individual 1	Individual 2	Individual 3
<i>High utility</i>	Michel P.	Prince Ali	Jérôme C.
↑	Prince Ali	Jérôme C.	Michel P.
<i>Low utility</i>	Jérôme C.	Michel P.	Prince Ali

- A majority (1 and 3) prefers Michel P. to Prince Ali  
 $\Rightarrow$  Michel P.  $\succ$  Prince Ali.
- A majority (1 and 2) prefers Prince Ali to Jérôme C.  
 $\Rightarrow$  Prince Ali  $\succ$  Jérôme C.
- A majority (2 and 3) prefers Jérôme C. to Michel P.  
 $\Rightarrow$  Jérôme C.  $\succ$  Michel P.
- Voting cycle (no transitivity of collective decision rule, a.k.a. the Condorcet paradox).
- The final outcome depends on the **agenda setting**.

- The Condorcet paradox can be avoided if there is a Condorcet winner, i.e. an alternative  $q^*$  that defeats all others in pairwise majority voting.
  
- Can we find (interesting) cases in which a Condorcet winner exists?

## Single peaked preferences

- Let us assume that the policy space has only one dimension (i.e.  $q$  is a scalar, not a vector).
- Voters' preferences over alternatives are said to be **single peaked** if voter  $i$ 's preference ordering is such that:

If  $\tilde{q} \leq q \leq q(\alpha_i)$  or  $\tilde{q} \geq q \geq q(\alpha_i)$ ,  
then  $W(q, \alpha_i) \geq W(\tilde{q}, \alpha_i)$ , i.e.  $q \succsim \tilde{q}$ .

## Median voter theorem

*Under direct democracy and sincere voting, and if the number of voters is an odd number and if voters have single peaked preferences, then a Condorcet winner always exists and it is the bliss point of the median voter,  $q(\alpha_m)$ . Black (1948)*

And,

*If, in addition, the open agenda assumption holds, the median voter's bliss point is the unique outcome of the vote.*

- The median voter theorem can be generalized to cases in which the number of individuals is even or in which voters vote strategically.
- Limits:
  - Preferences might not be single peaked.
  - Policies might not be summarized by a single dimension.
- However, the median voter can still be useful to think about many questions.

### 3 Political competition

The simplest model of political competition

Policy convergence theorem

Probabilistic voting

# The simplest model of political competition

- Assume that:
  - 1 A mass 1 of citizens (indexed by  $i$ ) vote using the majority rule to choose between two political parties  $A$  and  $B$ .
  - 2 The leader of the winning party will implement some (one-dimensional) policy  $q$ .
  - 3 Parties have the same objective: being elected.
  - 4 If elected, leaders apply the policy announced by their party during the electoral campaign.
  - 5 Voters' preferences over  $q$  are such that their bliss points can be ordered.
  - 6 The median voter's bliss point is  $q_m$ .

- Political competition

- The simplest model of political competition

- Party  $A$  maximization problem:

$$\max_{q_A} \mathbb{P}(q_A, q_B) = \begin{cases} 1 & \text{if } \#\{i : q_A \succ_i q_B\} > \#\{i : q_B \succ_i q_A\}, \\ \frac{1}{2} & \text{if } \#\{i : q_A \succ_i q_B\} = \#\{i : q_B \succ_i q_A\}, \\ 0 & \text{if } \#\{i : q_A \succ_i q_B\} < \#\{i : q_B \succ_i q_A\}, \end{cases}$$

where  $\mathbb{P}(q_A, q_B)$  is the probability of winning the election.

- Party  $B$  maximization problem:

$$\max_{q_B} \mathbb{P}(q_B, q_A) = 1 - \mathbb{P}(q_A, q_B).$$



## └ Political competition

## └ The simplest model of political competition

- Since  $q_m$  is the platform that attracts the highest number of votes, party  $A$  probability of winning can be rewritten as:

$$\mathbb{P}(q_A, q_B) = \begin{cases} 0 & \text{if } q_A \neq q_m \text{ and } q_B = q_m, \\ \frac{1}{2} & \text{if } q_A = q_B = q_m, \\ 1 & \text{if } q_A = q_m \text{ and } q_B \neq q_m. \end{cases}$$

- So, party  $A$  optimal choice is  $q_A = q_m$ .
- Similarly, party  $B$  optimal choice is  $q_B = q_m$ .
- This situation is a stable equilibrium, parties have no incentives to deviate.

## Policy convergence theorem

*If voters have single peaked preferences over a one-dimensional policy and if the two competing parties are able to announce and commit to a policy platform, then both parties will optimally choose the bliss point of the median voter as their policy platform. Downs (1957)*

- Proof by contradiction:
  - Suppose that the equilibrium is not  $q_A = q_B = q_m$ , then ...
- Take-away:
  - Under appropriate assumptions, political competition implements the Condorcet winner among voters.
- Limits:
  - Does not generalize to a situation with more than two parties.
  - Does not apply if there is no Condorcet winner.

## A failure of the median voter theorem

- Consider a society composed of three same-sized groups indexed by  $g = 1, 2, 3$  and who have to decide through majority voting how to allocate a given budget 1 between groups. Allocation are described by vector  $(q_1, q_2, q_3)$  such that  $q_3 = 1 - q_1 - q_2$ . Each group  $g$  has strictly monotonic preferences over  $q_g$ . Two parties compete for office and offer platforms so as to maximize their probability of election.

- There is no Condorcet winner, so no equilibrium outcome.
- Proof:
  - Any winning policy  $q = (q_1, q_2, q_3)$  voted by 1 and 2 against 3 will lose against an alternative policy  $q' = (q_1 - 2\varepsilon, q_2 + \varepsilon, q_3 + \varepsilon)$  which would be preferred to  $q$  by groups 2 and 3.
- **Probabilistic voting** will allow us to ensure the existence of an equilibrium.

## Probabilistic voting

- Consider a society in which three groups ( $g = 1, 2, 3$ ) of size  $\lambda_g$  such that  $\lambda_3 = 1 - \lambda_2 - \lambda_1$  vote for two parties ( $p = A, B$ ) who compete for election by proposing to allocate a budget across groups, such that:

$$\sum_{g=1}^3 \lambda_g q_g = 1.$$

- $\pi_A^g$  is the share of voters in group  $g$  who vote for party  $A$ , such that the expected vote share of party  $A$  is:

$$\pi_A = \sum_{g=1}^3 \lambda_g \pi_A^g.$$

- Voters base their decision on parties proposals and **ideology**. In particular, voter  $i$  in group  $g$  votes for party  $A$  if:

$$U^g(q_A) > U^g(q_B) + \sigma^{ig} + \delta,$$

where  $q_A$  ( $q_B$ ) is the policy vector of party  $A$  ( $B$ ),  $U^g(q_p)$  is the indirect utility of voters from group  $g$  from the policy vector  $q_p$ ,  $\sigma^{ig}$  is the non-policy related benefit for individual  $i$  from group  $g$  if party  $B$  wins, and  $\delta$  is the average (relative) popularity of party  $B$  in the population.

- In each group  $g$ ;  $\sigma^{ig}$  is uniformly distributed on:

$$\left[ -\frac{1}{2\phi^g}, \frac{1}{2\phi^g} \right],$$

while in the overall population,  $\delta$  is uniformly distributed on:

$$\left[ -\frac{1}{2\Psi}, \frac{1}{2\Psi} \right].$$

- Within each group  $g$ , the indifferent voter is individual  $i$  such that:

$$\sigma^{ig} = U^g(q_A) - U^g(q_B) - \delta \equiv \bar{\sigma}^g.$$

- All voters of group  $g$  with  $\sigma^{ig} < \bar{\sigma}^g$  vote for party A.
- Thus, party A's vote share is:

$$\pi_A = \sum_{g=1}^3 \lambda^g \phi^g \left( \bar{\sigma}^g + \frac{1}{2\phi^g} \right).$$

- Party A's probability of winning is:

$$\mathbb{P}_A = \text{Prob}_{\delta} \left( \pi_A \geq \frac{1}{2} \right) = \frac{1}{2} + \frac{\Psi}{\phi} \left[ \sum_{g=1}^3 \lambda^g \phi^g [U^g(q_A) - U^g(q_B)] \right],$$

where  $\phi$  is the average of  $\phi^g$  across groups.



- Both parties chose  $q_A$  and  $q_B$  to maximize their probability of winning the election, i.e. party  $A$  maximizes  $\mathbb{P}_A$  subject to:

$$\sum_{g=1}^3 \lambda_g q_{g,A} = 1.$$

- We get:

$$\phi_1 \frac{\partial U^1(q_{1,A})}{\partial q_1} = \phi_2 \frac{\partial U^2(q_{2,A})}{\partial q_2} = \phi_3 \frac{\partial U^3(q_{3,A})}{\partial q_3}.$$

- Similarly, for party  $B$ :

$$\phi_1 \frac{\partial U^1(q_{1,B})}{\partial q_1} = \phi_2 \frac{\partial U^2(q_{2,B})}{\partial q_2} = \phi_3 \frac{\partial U^3(q_{3,B})}{\partial q_3}.$$

- Thus:

$$q_A = q_B.$$

- Interpretations:
  - Convergence of platforms.
  - Groups with a high  $\phi$  obtain more.
  
- What does high a  $\phi$  represent?
  - More sensibility to policy and weaker ideological bias.
  - These groups act as swing voters.

## 4 Ideology and partisan politics

Lobbying

Parties' ideology

## Ideology and partisan politics

- Politicians (or parties) might have preferences over policies and/or might simply represent groups with specific ideology.
- Organized groups can also influence the political process through political action (lobbying, demonstrations, etc.).

# Lobbying

- Let us model political action as campaign contributions that can be used to change parties' popularity.
- Same framework as the basic probabilistic voting model (see slide 29).
- Each group  $g$  might be organized:

$$O_g = 1, O_g = 0 \text{ otherwise.}$$

- Each member of organized group  $g$  make campaign contributions  $C_P^g$  to party  $P = A, B$ .

- Individual cost of contributing is:

$$D(C_A^g, C_B^g) = \frac{1}{2} \left[ (C_A^g)^2 + (C_B^g)^2 \right].$$

- Party A receives:

$$C_A = \sum_{g=1}^3 O_g \lambda^g C_A^g.$$

- Campaign contributions are used to change parties' relative popularity as:

$$\delta = \tilde{\delta} + h(C_B - C_A),$$

where  $h > 0$  and  $\tilde{\delta}$  is uniformly distributed on:

$$\left[ -\frac{1}{2\Psi}, \frac{1}{2\Psi} \right].$$

- Voter  $i$  in group  $g$  votes for party  $A$  if:

$$U^g(q_A) > U^g(q_B) + \sigma^{ig} + \tilde{\delta} + h(C_B - C_A),$$

- Within each group  $g$ , the indifferent voter is individual  $i$  such that:

$$\sigma^{ig} = U^g(q_A) - U^g(q_B) - h(C_B - C_A) - \tilde{\delta} \equiv \bar{\sigma}^g.$$

- All voters of group  $g$  with  $\sigma^{ig} < \bar{\sigma}^g$  vote for party  $A$ .

- Thus, party A's vote share is:

$$\pi_A = \sum_{g=1}^3 \lambda^g \phi^g \left( \bar{\sigma}^g + \frac{1}{2\phi^g} \right).$$

- Party A's probability of winning is:

$$\mathbb{P}_A = \frac{1}{2} + \frac{\Psi}{\phi} \left[ \sum_{g=1}^3 \lambda^g \phi^g [U^g(q_A) - U^g(q_B)] - h(C_B - C_A) \right].$$



- Each individual in group  $g$  chooses campaign contributions in order to maximize her/his expected utility:

$$\max_{C_A^g, C_B^g} \mathbb{P}_A U^g(q_A) + (1 - \mathbb{P}_A) U^g(q_B) - D(C_A^g, C_B^g).$$

- Optimality conditions are:

$$\frac{\partial \mathbb{P}_A}{\partial C_A^g} [U^g(q_A) - U^g(q_B)] - C_A^g \leq 0,$$

and:

$$\frac{\partial \mathbb{P}_A}{\partial C_B^g} [U^g(q_A) - U^g(q_B)] - C_B^g \leq 0.$$

- We get:

$$C_A^g = \text{Max} \left\{ 0, \Psi h \lambda^g O_g \bar{U}_g \right\},$$

and

$$C_B^g = \text{Max} \left\{ 0, -\Psi h \lambda^g O_g \bar{U}_g \right\},$$

where:

$$\bar{U}_g = U^g(q_A) - U^g(q_B).$$

- Non-organized groups do not contribute.
- Groups contribute only to one group at a time. Each group  $g$  contributes to the party that offers the highest utility to its members.

- Party  $A$  chooses  $q_A$  in order to maximize  $\mathbb{P}_A$  subject to the budget constraint, taking into account voters' optimal contributions. So does party  $B$ .
- Symmetry of voters' contributions ensures symmetry of parties' behavior. They will thus converge to the same platform.
- To which platform do they converge?

- Objective function:

$$\mathbb{P}_A = \frac{1}{2} + \frac{\Psi}{\phi} \left[ \sum_{g=1}^3 \lambda^g \phi^g [\bar{U}_g] - h \left( \sum_{g=1}^3 C_B^g - \sum_{g=1}^3 C_A^g \right) \right].$$

- Which can be rewritten as:

$$\mathbb{P}'_A = \frac{1}{2} + \frac{\Psi}{\phi} \left[ \sum_{g=1}^3 \lambda^g \phi^g [\bar{U}_g] + h \left( \sum_{g=1}^3 \Psi h \lambda^g O_g \bar{U}_g \right) \right],$$

where we neglected  $C_B^g$  terms to ease notations.

- Or :

$$\mathbb{P}'_A = \frac{1}{2} + \frac{\Psi}{\phi} \left[ \sum_{g=1}^3 \lambda^g \bar{U}_g \left( \phi^g + \Psi h^2 O_g \right) \right].$$

- Optimality conditions are such that:

$$\lambda_1 \frac{\partial U^1(q_{1,A})}{\partial q_1} \left( \phi_1 + \frac{\Psi}{\phi} h^2 O_1 \right) = \lambda_2 \frac{\partial U^2(q_{2,A})}{\partial q_2} \left( \phi_2 + \frac{\Psi}{\phi} h^2 O_2 \right) = \dots$$

- Parties promise higher transfers to organized groups (and to less ideologically biased groups).
- This bias is larger the easier voters can be influenced (high  $h$ ).

## Parties' ideology

- So far, we assumed that politicians only derive utility from being in office.
- What happens if politicians also care about implemented policies?
- Such politicians face a trade-off between getting elected and implementing their preferred policy.

- Let us model politicians' preferences as some utility they derive from policies.
- Continue with probabilistic voting.
- Assume there is a one-dimensional policy  $q$  and that voters have single peaked preferences.  $q^m$  denotes the median voter's bliss point.
- Two parties compete for election.

- Parties have now preferences such that party  $A$  maximizes the following expected utility function:

$$\mathbb{P}_A (R_A + W_A(q_A)) + (1 - \mathbb{P}_A) W_A(q_B),$$

where  $\mathbb{P}_A$  is the probability that party  $A$  wins the election,  $R_A$  is the rent that the party derives from being in office (implicitly set to 1 until now), and  $W_A(q)$  is the utility of party  $A$  if policy  $q$  is implemented.

- Similarly, party  $B$  maximizes:

$$(1 - \mathbb{P}_A) (R_B + W_B(q_B)) + \mathbb{P}_A (W_B(q_A)).$$



- At the (Nash) equilibrium, policy platforms are such that:

$$q_A^* = \arg \max_{q_A} \mathbb{P}_A (R_A + W_A(q_A)) + (1 - \mathbb{P}_A) W_A(q_B^*),$$

and:

$$q_B^* = \arg \max_{q_B} (1 - \mathbb{P}_A) (R_B + W_B(q_B)) + \mathbb{P}_A (W_B(q_A^*)),$$

where  $\mathbb{P}_A$  is also a (differentiable) function of announced platforms.

- Equilibrium policy platforms can be rewritten as solutions of:

$$\frac{\partial \mathbb{P}_A}{\partial q_A} [R_A + W_A(q_A) - W_A(q_B)] + \mathbb{P}_A \frac{\partial W_A}{\partial q_A} = 0.$$

and:

$$-\frac{\partial \mathbb{P}_A}{\partial q_B} [R_B + W_B(q_B) - W_B(q_A)] - \mathbb{P}_A \frac{\partial W_B}{\partial q_B} = 0,$$

- First term: Change in probability of winning  $\times$  Utility of winning.
- Second term: Change in utility  $\times$  Probability of winning.

- Despite that  $q^m$  maximizes the probability of winning,  $q_A = q_B = q^m$  is typically **not** an equilibrium solution, i.e. there is *a priori* no policy convergence.
- To see this, consider what happens if party A deviates from  $q_A = q_B = q^m$  and moves toward its own bliss point  $\tilde{q}_A$ :

① Utility loss:

$$\frac{\partial \mathbb{P}_A}{\partial q_A} R_A < 0.$$

② Utility gain:

$$\mathbb{P}_A \frac{\partial W_A}{\partial q_A} > 0.$$

- The deviation might be profitable.
- So, there can be an equilibrium where  $q_A \neq q_B \neq q^m$ .
- The stronger parties' ideologies, the further away policies will be from those preferred by the median voter.

## 5 Relaxing commitment

Promises are cheap talks

Endogenous politicians: The citizen-candidate model

## Relaxing commitment

- So far, we (implicitly or explicitly) assumed that parties implement the platform they announced if they get elected.
- Is it a reasonable assumption?
- No! At least not in simple static models. There is no reason why an ideologically biased politician would not implement her/his own preferred policy once elected.

## Promises are cheap talks

- Parties bliss points are  $\tilde{q}_A$  and  $\tilde{q}_B$ .
- Assume parties cannot credibly commit to implement a policy that is not their preferred one.
- Promises are cheap talks . . .

*“Les promesses n’engagent que ceux qui les écoutent.” J. Chirac (Le Monde, February 22, 1988)*

. . . and voters know it.

- So, voters compare their utility under  $\tilde{q}_A$  and  $\tilde{q}_B$ .

- The unique equilibrium situation is such that:
  - Party  $A$  wins and  $\tilde{q}_A$  is implemented if  $U^m(\tilde{q}_A) > U^m(\tilde{q}_B)$ .
  - Party  $B$  wins and  $\tilde{q}_B$  is implemented if  $U^m(\tilde{q}_A) < U^m(\tilde{q}_B)$ .
  - Either party  $A$  or party  $B$  wins and  $\tilde{q}_A = \tilde{q}_B$  is implemented if (by chance)  $U^m(\tilde{q}_A) = U^m(\tilde{q}_B)$ .
- Parties' preferences are even more important if commitment is not possible.
- It is thus very important to understand the internal functioning of parties and how parties preferences are formed or influenced by specific groups.

## Endogenous politicians: The citizen-candidate model

- Who are politicians? How are they selected?
- Let us model individuals' decision to run for election by adding an entry stage to the election game without commitment.
- Timing of a simple model:
  - 1 Each citizen decides whether or not to run for office. Running implies a cost  $\epsilon$ .
  - 2 An election is held among those who compete.
  - 3 Because there is no commitment, the elected candidate implements her/his preferred policy (if nobody runs, a default policy  $\bar{q}$  is implemented).



- An equilibrium situation must be sequentially rational, i.e. the (Nash) equilibrium at the entry stage must rationally anticipate the voting stage's outcome.
- **Single-candidate equilibrium**

If a Condorcet winner exists and if the median citizen decides to run for office, she/he will be the only candidate and her/his bliss point  $q_m^*$  will be implemented. This will happen if and only iff:

$$U^m(q_m^*) - U^m(\bar{q}) \geq \epsilon.$$

- No electoral competition if a Condorcet winner exists.
- Not very likely in a multidimensional policy space.

- **Two-candidate equilibrium**

For a situation with two candidates,  $i$  and  $j$  to be an equilibrium situation, the two candidates must receive the same number of votes and both must prefer to run than not to run. This will happen if and only if:

$$\left\{ \begin{array}{l} U^m(q_i^*) = U^m(q_j^*), \\ \frac{1}{2}U^i(q_i^*) - \frac{1}{2}U^i(q_j^*) \geq \epsilon, \\ \frac{1}{2}U^j(q_j^*) - \frac{1}{2}U^j(q_i^*) \geq \epsilon. \end{array} \right.$$

- Such an equilibrium will often exist.
- Many pairs of policies can fulfill these conditions.
- Two-candidate equilibria do not imply convergence.

- **Three-or-more-candidate equilibrium**

For a situation with more than two candidates, (e.g.  $i$ ,  $j$ , and  $k$ ) to be an equilibrium situation, some of them must run knowing that they have no chance to be elected. Such candidates run only to prevent one of the other candidates from winning in a pairwise election. I.e. They must prefer to run rather not to run, because they know that the fact they run will allow to select a policy that they favor over the policy that would be selected if they would not run. Such situations are such that (assuming that candidate  $i$  finally wins):

$$\begin{cases} j \text{ runs: } & U^j(q_i^*) - U^j(q_k^*) \geq \epsilon, \\ k \text{ runs: } & U^k(q_i^*) - U^k(q_j^*) \geq \epsilon. \end{cases}$$

- Such an equilibrium can exist if preferences are not single peaked.
- Again, no automatic convergence to the median voter's bliss point.

- Nice thing about the citizen-candidate approach:
  - No automatic convergence toward the median voter's preferred policy.
  - Few restrictions on preferences.
  - Candidates' preferences may influence policies that are ultimately implemented.
- Limitation:
  - Multiplicity of equilibria makes difficult to generate testable predictions.

- 6 Empirical evidence on political competition
  - Downsian model VS Citizen-candidate model?
  - Changing the electorate
  - Reserving positions

## Downsian model VS Citizen-candidate model?

- Downsian approach:
  - Convergence to the median voter's preferences;
  - Implemented policies do not depend on candidates' preferences.
- Citizen-candidate approach:
  - No inevitable convergence to the median voter's preferences;
  - Implemented policies may depend on candidates' preferences.
- Which model should we retain? I.e., do politicians represent the median voter?

## Empirical tests

- Let us look at two specific predictions of the median voter theorem.
  - 1 Changing electorate.
    - Suppose individuals endowed with voting rights have bliss points (uniformly) distributed over  $[0, 1]$ . How will the policy outcome change if new voters are enfranchised such that bliss points are now (uniformly) distributed over  $[0, 2]$ ?
  - 2 Reserving positions for candidates from specific groups.
    - How will policy change if we force the elected politicians to be from a specific group (that would otherwise never be elected)?

## Changing the electorate

Grant Miller, 2008. "Women's Suffrage, Political Responsiveness, and Child Survival in American History," *The Quarterly Journal of Economics*, MIT Press, vol. 123(3), pages 1287-1327, August.

- Women's suffrage in the United States.
  - Universal women's suffrage was achieved in 1920.
  - However, 29 states had already extended suffrage to women before this date.
- Does it make a difference?



- A (very) simple model:
- Individuals have preferences on  $\alpha$ , the amount of municipal expenses on health.
- Individual's  $i$  preferences are given by:

$$u_i = -|\alpha - w_i|,$$

where:

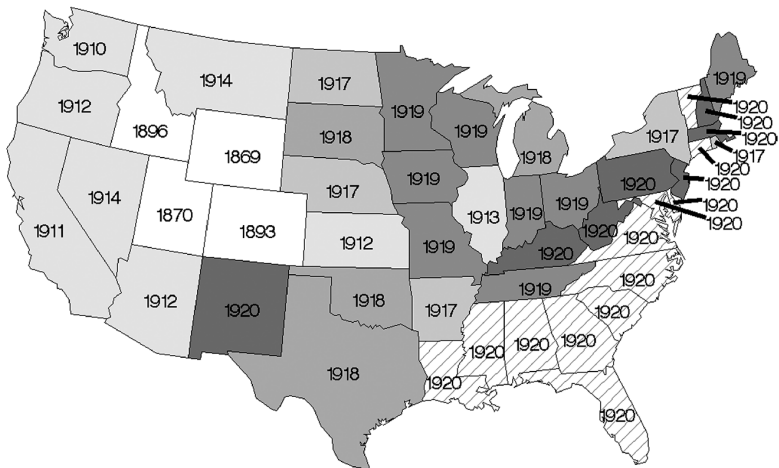
$$w_i \sim U[0, \frac{1}{2}] \text{ among men,}$$

$$w_i \sim U[\frac{1}{2}, 1] \text{ among women.}$$

- Are these preferences single peaked?
- How different are electoral outcomes depending on who vote?
- There are (lots of) evidence that women tend to favor more health expenditure than men. But what if this is not the case? I.e. if the two uniform distributions were identical?

Empirical evidence on political competition

Changing the electorate



Timing of women's suffrage rights.

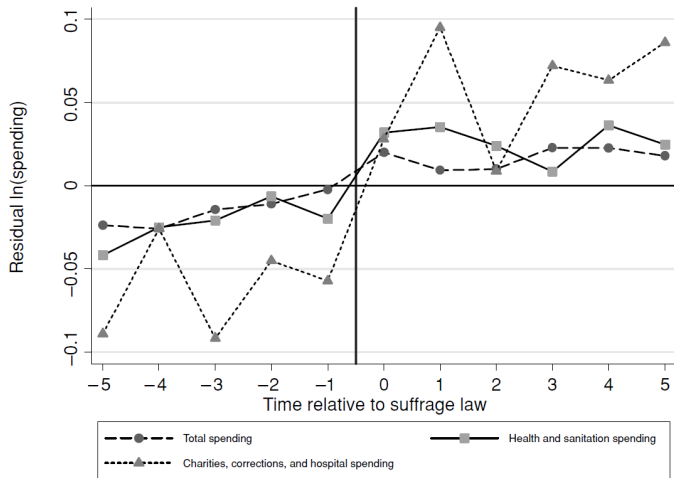
Source: Miller (2008)

- Difference-in-differences setting:

$$\log \text{Municipal spending} = \beta_0 + \beta_1 \text{Women's suffrage}_{t,s} + \delta_t + \delta_s + \dots$$

Dependent variable	Estimate (standard error)	<i>N</i>	<i>R</i> <sup>2</sup>
Panel A: Municipal public finance			
ln(total spending)	0.079*** (0.029)	3,661	0.97
ln(health conservation and sanitation spending)	0.061* (0.036)	3,661	0.94
ln(charities, hospitals, and corrections spending)	0.360*** (0.105)	3,454	0.92
ln(total infrastructure investment)	0.012 (0.086)	3,658	0.85

Source: Miller (2008)



Source: Miller (2008)

## Reserving positions

- Does the **identity** of the elected politician affect policy outcomes?
- Look at policies that favor politicians from a particular group (whose representative candidate would not have been elected) and compare implemented policies once such politicians are elected to policies previously implemented.
- If implemented policies do not change, this means that the new elected politician does not implement her/his preferred policies, i.e. this goes against the citizen-candidate approach.
- Examples from India:
  - Reservations for women;
  - Reservations for minorities.

- Indian states have authority over state-level expenditure.
- 1950 Constitution:
  - In each district, representation in each local council, and among the heads of all the council, must be equal to the share of scheduled castes and scheduled tribes (SC and ST hereafter) in the district.
- Indian village councils, a.k.a. *Gram Panchayats*, have authority over local public goods provision.
- 1993 Constitutional amendment:
  - One third of village council heads, a.k.a. *Pradhans*, must be women.

## Reservations for women

Raghabendra Chattopadhyay & Esther Duflo, 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India," *Econometrica*, Econometric Society, vol. 72(5), pages 1409-1443, 09.

- One-third of villages randomly selected to be reserved for women.
- Median voter model predicts that the median voter's bliss point will be implemented. What does the citizen-candidate model predict?

## Reservations for women: theory

- Each village elect an individual who implements policy  $q \in [0, 1]$ .
- Each voter  $i$  has a preferred policy  $w_i$  such that:

$$w_i \in [0, W] \text{ for women,}$$

$$w_i \in [M, 1] \text{ for men.}$$

- Individuals' utilities are such that:

$$u_i = -|q - w_i| \text{ if } i \text{ is a candidate and } q \text{ is implemented,}$$

$$u_i = -|q - w_i| - \epsilon_i \text{ if } i \text{ is a candidate and } q \text{ is implemented.}$$

- Women face higher barriers to entry than men do:

$$\epsilon_W > \epsilon_M > 0.$$

- The median voter's bliss point is  $q_m$ .



- Timing:

- ① Each citizen decides whether or not to run for office.
- ② Citizens vote strategically for one of the candidates.
- ③ The implemented policy  $\tilde{q}_j$  is a weighted sum of the elected candidate's preferred policy  $q_j^*$  and the policy  $\bar{q}$  preferred by the local elite:

$$\tilde{q}_j = \alpha q_j^* + (1 - \alpha)\bar{q},$$

where  $\alpha \in [0, 1]$ . If no candidate ran, then  $\bar{q} > q_m$  is implemented.

- **First theoretical result:** Under some (reasonable) assumptions, women do not run for office in the absence of reservation.
- Let us show why by restricting ourselves to equilibria with at most 2 candidates.

# 1-candidate equilibrium

- Under what conditions will a woman agree to run unopposed?
- Woman  $j$  must prefer to run an that  $\tilde{q}_j$  is implemented rather than not to run and that  $\bar{q}$  is implemented:

$$-|\tilde{q}_j - w_j| - \epsilon_w \geq -|\bar{q} - w_j|,$$

which yields:

$$\bar{q} - \tilde{q}_j \geq -\epsilon_w.$$

So, the most men-friendly outcome implemented by a woman will be:

$$q_j^w \equiv \bar{q} - \epsilon_w.$$

- Empirical evidence on political competition

- Reserving positions

- Under what conditions won't any man run against this woman?
- A man  $k$  would run against this woman  $j$  if he prefers  $\tilde{q}_k$  to be implemented and he is sure to win, i.e. if:

$$\tilde{q}_k - q_j^W \geq \epsilon_M, \text{ and } \tilde{q}_k - q_m < q_m - q_j^W.$$

So, the most women-friendly outcome implemented by a man will be:

$$q_j^m \equiv q_j^W + \epsilon_M = \bar{q} - \epsilon_W + \epsilon_M.$$

No woman run unopposed in the absence of reservation if:

$$\epsilon_W - \frac{1}{2}\epsilon_M > \bar{q} - m.$$

- A high cost of running prevents women to compete for office. Only women with extreme women-friendly preferences will run. But if the cost of running is low for men, a man may compete → 2-candidate equilibrium.

## 2-candidate equilibrium

- Under what conditions will a woman agree to run against another candidate?
- Both candidates need to have the same chance of winning (symmetry with respect to  $m$ ). The outcome implemented by the most women-friendly woman is  $(1 - \alpha)\bar{q}$ . So, the largest distance between candidates is  $2m - 2(1 - \alpha)\bar{q}$ . The most extreme woman agrees to run if:

$$\frac{1}{2} \{-|(1 - \alpha)\bar{q}|\} + \frac{1}{2} \{-|2q_m - (1 - \alpha)\bar{q}|\} - \epsilon_W \geq -|2q_m - (1 - \alpha)\bar{q}|$$

which yields:

$$\epsilon_W \leq q_m - (1 - \alpha)\bar{q}.$$

- So, no woman runs against another candidate if:

$$\epsilon_W > q_m - (1 - \alpha)\bar{q}.$$

A high cost of running prevents women to compete for office.

- **Other theoretical result:** Reservations for women can *increase* or *decrease* women's welfare and that of the median voter.
  
- How increase?
  - Intuitive.
- How decrease?
  - If nobody runs because of reservations, then the default policy will be implemented, which might be less favorable both to women and to the median voter.

## Reservations for women: empirical evidence

- Compare equilibrium policies in reserved villages to policies in non-reserved ones, and look at whether policies in reserved areas reflect women's preferences more than in non-reserved areas.
- Remember that reservations for women were randomly assigned.



## └ Empirical evidence on political competition

## └ Reserving positions

	Reserved GP (1)	Unreserved GP (2)
<i>West Bengal</i>		
Total Number	54	107
Proportion of Female Pradhans	100%	6.5%
<i>Rajasthan</i>		
Total Number	40	60
Proportion of Female Pradhans	100%	1.7%

Share of women among Pradhans.

Source: Chattopadhyay & Duflo (2004)

- Empirical evidence on political competition

- Reserving positions

## Comparing preferences

	West Bengal						Rajasthan					
	Women			Men	Average	Difference	Women			Men	Average	Difference
	Reserved	Unreserved	All				Reserved	Unreserved	All			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
<i>Other Programs</i>												
Public Works	.84	.84	.84	.85	.84	-.01	.60	.64	.62	.87	.74	-.26
Welfare Programs	.12	.09	.10	.04	.07	.06	.25	.14	.19	.03	.04	.16
Child Care	.00	.02	.01	.01	.01	.00	.04	.09	.07	.01	.02	.06
Health	.03	.04	.04	.02	.03	.02	.06	.08	.07	.04	.03	.03
Credit or Employment	.01	.01	.01	.09	.05	-.08	.06	.06	.05	.04	.09	.01
Total Number of Issues	153	246	399	195			72	88	160	155		
<i>Breakdown of Public Works Issues</i>												
Drinking Water	.30	.31	.31	.17	.24	.13	.63	.48	.54	.43	.49	.09
Road Improvement	.30	.32	.31	.25	.28	.06	.09	.14	.13	.23	.18	-.11
Housing	.10	.11	.11	.05	.08	.05	.02	.04	.03	.04	.04	-.01
Electricity	.11	.07	.08	.10	.09	-.01	.02	.04	.03	.02	.02	.01
Irrigation and Ponds	.02	.04	.04	.20	.12	-.17	.02	.02	.02	.04	.03	-.02
Education	.07	.05	.06	.12	.09	-.06	.02	.07	.05	.13	.09	-.09
Adult Education	.01	.00	.00	.01	.00	.00	0	0	.00	.00	.00	.00
Other	.09	.11	.10	.09	.09	.01	.19	.21	.20	.12	.28	.05
Number of Public Works Issues	128	206	334	166			43	56	99	135		
<i>Public Works</i>												
Chi-square		8.84		71.72				7.48		16.38		
p-value		.64		.00				.68		.09		

Issues raised by women and men (complaints).

Source: Chattopadhyay & Duflo (2004)

- Drinking water, road improvement and welfare programs were the issues most frequently raised by women.
- Road improvement, irrigation, drinking water, and education were the issues most frequently raised by men.
- The hypothesis that the distributions of men and women complaints are the same is rejected.
- The hypothesis that the complaints in reserved and non-reserved villages are drawn from the same distribution is not rejected.

- Empirical evidence on political competition

- Reserving positions

# Comparing policies

Dependent Variables	West Bengal			Rajasthan		
	Mean, Reserved GP (1)	Mean, Unreserved GP (2)	Difference (3)	Mean, Reserved GP (4)	Mean, Unreserved GP (5)	Difference (6)
<i>A. Village Level</i>						
Number of Drinking Water Facilities	23.83	14.74	9.09	7.31	4.69	2.62
Newly Built or Repaired	(5.00)	(1.44)	(4.02)	(.93)	(.44)	(.95)
Condition of Roads (1 if in good condition)	.41 (.05)	.23 (.03)	.18 (.06)	.90 (.05)	.98 (.02)	-.08 (.04)
Number of Panchayat Run Education Centers	.06 (.02)	.12 (.03)	-.06 (.04)			
Number of Irrigation Facilities	3.01	3.39	-.38	.88	.90	-.02
Newly Built or Repaired	(.79)	(.8)	(1.26)	(.05)	(.04)	(.06)
Other Public Goods (ponds, biogas, sanitation, community buildings)	1.66 (.49)	1.34 (.23)	.32 (.48)	.19 (.07)	.14 (.06)	.05 (.09)
Test Statistics: Difference Jointly Significant ( <i>p</i> -value)			4.15 (.001)			2.88 (.02)
<i>B. GP Level</i>						
1 if a New Tubewell Was Built	1.00	.93 (.02)	.07 (.03)			
1 if a Metal Road Was Built or Repaired	.67 (.06)	.48 (.05)	.19 (.08)			
1 if There Is an Informal Education Center in the GP	.67 (.06)	.82 (.04)	-.16 (.07)			
1 if at Least One Irrigation Pump Was Built	.17 (.05)	.09 (.03)	.07 (.05)			
Test Statistics: Difference Jointly Significant ( <i>p</i> -value)			4.73 (.001)			

Public goods provision.

Source: Chattopadhyay & Duflo (2004)

- The gender of the Pradhan affects the provision of public goods.
- Significantly more investments in drinking water in villages reserved for women (consistent with women complain more about water).
- The effect of reservation on the quality of roads is positive in West Bengal and negative in Rajasthan (consistent with differences in complaint data).
- Unexpected result: no significant effect of reservation on irrigation in West Bengal.

## Reservations for minorities

Rohini Pande, 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India," *American Economic Review*, American Economic Association, vol. 93(4), pages 1132-1151, September.

- Reservations of seats for low-caste legislators are updated every 10 years following the Indian census. New reservations are implemented for the next election, which create discontinuous jumps in the number of reserved seats.
- Why should such reservations change policy outcomes?
  - Reservations ensure representation of groups that would be otherwise under-represented (e.g. because high cost of running) and might influence policies (in favor of groups for which seats are reserved).

- Estimation strategy:

$$\text{Spending} = \beta_0 + \beta_1 \text{Share of reserved seats}_{s,t} + \delta_t + \delta_s + \dots$$

- Targeted policy outcomes: job quotas for low-caste members, welfare expenditure targeted to SC or ST.

## Empirical evidence on political competition

## Reserving positions

	Job quotas				SC welfare spending				ST welfare spending			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SC reservation	0.539*** (0.120)	0.493*** (0.115)	0.659*** (0.108)	0.675*** (0.135)	0.011 (0.181)	0.082 (0.196)	0.083 (0.200)	0.126 (0.198)	-0.524 (0.324)	-0.511 (0.324)	-0.436 (0.289)	-0.305 (0.301)
ST reservation	0.199* (0.109)	-0.316 (0.204)	-0.301 (0.225)	-0.371* (0.223)	0.092 (0.103)	0.067 (0.104)	0.076 (0.108)	-0.024 (0.127)	0.713** (0.335)	0.693** (0.330)	1.019*** (0.301)	0.863*** (0.325)
SC census population share		0.188*** (0.065)	-0.071 (0.073)	-0.113 (0.081)		-0.052 (0.077)	-0.055 (0.080)	-0.104 (0.068)		-0.063 (0.151)	-0.145 (0.170)	-0.195 (0.169)
ST census population share		0.559*** (0.170)	0.842*** (0.190)	0.861*** (0.192)		-0.033 (0.077)	-0.028 (0.080)	0.07 (0.081)		0.033 (0.138)	0.19 (0.161)	0.317* (0.187)
SC current population share			0.648*** (0.132)	0.699*** (0.172)			-0.052 (0.121)	-0.092 (0.123)			-0.435** (0.189)	-0.347** (0.172)
ST current population share			-0.675** (0.294)	-0.689** (0.313)			-0.12 (0.136)	-0.163 (0.131)			-0.576** (0.233)	-0.706*** (0.257)
Other controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
Adjusted R <sup>2</sup>	0.88	0.9	0.9	0.91	0.76	0.76	0.76	0.76	0.83	0.83	0.84	0.84
Number of observations	519	519	519	505	274	274	274	274	298	298	298	298

Targeted policy outcomes.

Source: Pande (2003)



## 7 Conclusion

# Conclusion

- The median voter theorem provides a useful benchmark for voting models.
  - Explain convergence.
  - Predict that changes in the median voter's preferences induce policy changes.
- But the median voter theorem fails in many dimensions.
  - Understanding politicians' motivation and the way they compete is important.

End of lecture.

Lectures of this course are inspired from those taught by D. Acemoglu, Y. Algan, R. Durante, and B. Olken.