

# Political Economy

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École Polytechnique - CREST

Master in Economics

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Schedule: Every Tuesday 13:00 to 15:00

# Outline of the class

Introduction

**Lecture 2-5: Tools of political economics with applications**

Lecture 6: Comparative Politics

**Part II: Dynamic Political Economy**

# Lecture 2-5: Tools of political economics

Aim of the first lecture:

- 1 **Background for political economy**
- 2 Introduce alternative work-horse models of policy choice
- 3 Illustrate political forces that influence policy

# Preferences and Institutions

First outline some important tenets of

- social choice theory
- spacial voting theory

More in course Social Choice and Voting

# A General Policy Problem

- (Economic and Politically) Maximizing agents. Set  $V$  agents can be small (e.g. committee) or large (e.g. national election)
- Agents may differ according to an individual characteristic  $\alpha^i$  (can be a vector): capture idiosyncratic characteristics, endowments, risks, socioeconomic attributes, etc. Follow a given distribution.
- Economic Agent:
  - ▶ Maximize Utility function w.r.t. economic variable  $c^i$  subject to a budget constraint  $H$
  - ▶ Vector  $q \in Q$ : Economic policies, taken as given
  - ▶ Vector  $p$ : data determined by the market

# Economic Agent Problem

$$\max_{c^i} U(c^i, q, p; \alpha^i)$$

subject to

$$H(c^i, q, p; \alpha^i) \geq 0.$$

From this problem write indirect utility function:

$$W(q, p; \alpha^i) = \max_{c^i} \{U(c^i, q, p; \alpha^i) | H(c^i, q, p; \alpha^i) \geq 0\}$$

Examples: Savings, Labor Supply, Purchase of Goods, Investments  
(given taxes, fiscal incentives and prices)

## Policy Maker:

- Set  $q$  taking into account  $p$  and constraint  $G(q, p) \geq 0$
- If the constraint is binding  $\rightarrow p = P(q)$ : market outcome depends on policy parameters

## Political Agent:

- Maximize Indirect Utility function  $W$  (by voting, lobbying, ...)
- Individual preferences over the policies  $W(q; \alpha^i) \equiv W(q, P(q); \alpha^i)$

# Political Agent Problem

So that bliss point (i.e. preferred policy) of voter  $i$

$$q(\alpha^i) = \operatorname{argmax}_q W(q; \alpha^i)$$

$\Rightarrow$  Agents with different preferences  $\alpha^i$  have conflicting preferences.



# How do we Aggregate Preferences?

- In the general setting, a positive analysis of economic policymaking amounts to specifying an institution (e.g. majority rule) and asking how it aggregates political actions, based on individual policy preferences, into equilibrium policies
- ⇒ No general rule (with desirable properties) that enables a democracy to consistently aggregate individual preferences into policy choices.

## Arrow's (1951) Impossibility theorem

There is no democratic mechanism which allows individual preferences to be aggregated in a consistent way:

H1 Rationality (complete and transitive)

H2 Unrestricted domain

H3 Weak Pareto optimality

H4 Independence (from irrelevant alternatives)

⇒ We are going to drop *H2* and restrict individual preferences

# Majority rule voting

- A1 **Direct democracy:** The citizens themselves make the policy choices.
  
- A2 **Sincere voting:** In every vote, each citizen votes for the alternative that gives him the highest utility according to his policy preferences (indirect utility function)  $W(q; \alpha^i)$ .
  
- A3 **Open agenda:** Citizens vote over pairs of policy alternatives, such that the winning policy in one round is posed against a new alternative in the next round and the set of alternatives includes all feasible policies.

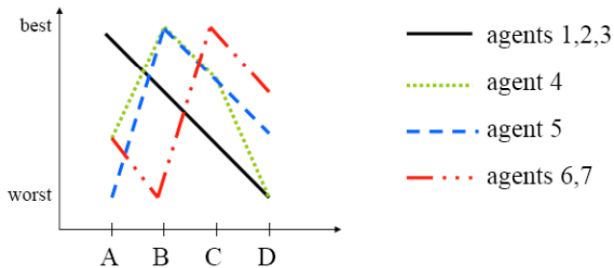
# One-Dimensional Policy

## Definition: Condorcet winner

A Condorcet winner is a policy  $q^*$  that beats any other feasible policy in a pairwise voting.

## Definition: Single peaked preferences (Black, 1948)

Policy preferences of voter  $i$  are single peaked if the following statement is true: if  $q'' \leq q' \leq q(\alpha^i)$  or  $q'' \geq q' \geq q(\alpha^i)$  then  $W(q''; \alpha^i) \leq W(q'; \alpha^i)$ .



Preferences of agents 6 and 7 are not single-peaked.

## Median Voter's Theorem

If all voters have single-peaked policy preferences over a given ordering of policy alternatives, a Condorcet winner always exists and coincide with the median-ranked bliss point ( $q^m$ ).

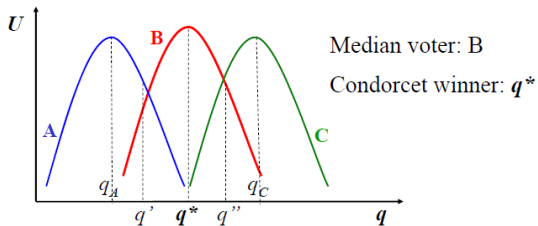
## Median Voter's Theorem

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## Corollary

$q^m$  is the unique equilibrium policy (stable point) under pure majority rule, that is, under  $A1 - A3$ .

### Sketch of Proof



$$q' < q^* \begin{cases} \text{A prefer } q' \\ \text{B and C prefer } q^* \end{cases} \quad q'' > q^* \begin{cases} \text{A and B prefer } q^* \\ \text{C prefer } q'' \end{cases}$$

$\Rightarrow q^*$  always win in a majority voting election



# Example: A Simple Model of Redistribution

- Acemoglu, Robinson (2006)
- A continuum of voters  $\mathcal{I} = [0, 1]$ 
  - ▶ Income  $y_i \sim_{iid} F(\cdot)$ .
  - ▶ Average Income  $\bar{y} = \int y dF(y)$
  - ▶ Median  $y^m = F^{-1}(1/2)$ .
  - ▶ In a typical income distribution  $y^m < \bar{y}$ .
  - ▶ Linear utility  $u(c_i) = c_i$ .

# The Government

- There is a uniform tax rate  $\tau$ .
- There may be inefficiencies due to the use of a tax, either because it is costly to organize or because of distortions created by the tax system (e.g. tax evasion). This is captured by a cost  $c(\tau)\bar{y}$ , with  $c'(\cdot) > 0$ ,  $c''(\cdot) > 0$ ,  $c'(0) = 0$ ,  $c'(1) > 1$  (so that no agent prefers  $\tau = 1$ ).
- The revenue collected is  $T = (\tau - c(\tau))\bar{y}$ .
- $T$  is then used as a lump sum transfer to the agents to be used for private consumption.

# Ideal Policies

- The utility an agent derives from a policy  $\tau$  is

$$V(\tau, y_i) = (1 - \tau)y_i + (\tau - c(\tau))\bar{y}.$$

- $V(\cdot)$  is strictly concave and hence single-peaked.
- The ideal policy of agent  $i$  satisfies

$$\tau^*(y_i) = \begin{cases} [c']^{-1} \left( 1 - \frac{y_i}{\bar{y}} \right) & \text{if } y_i < \bar{y} \\ 0 & \text{if } y_i \geq \bar{y} \end{cases}.$$

- Hence richer individuals favor lower tax rates. ( $c'(\cdot)$  is increasing hence so is its inverse  $[c']^{-1}(\cdot)$ )
- In particular every agent with an income higher than the average prefers  $\tau = 0$

- The Median voter theorem implies that the Condorcet winner is

$$\hat{\tau} = \tau^*(y^m).$$

- With a typical income distribution such that  $y^m < \bar{y}$ , we have  $\hat{\tau} > 0$ .
- As  $\frac{y^m}{\bar{y}}$  decreases (more inequality),  $\hat{\tau}$  increases.
- Extending the franchise leads to a higher tax rate and bigger government.

- Unidimensionality and single-peakedness strong assumptions.

Unidimensionality: restricts available policy instruments

Single-peakedness: when agents make economic choices

concavity of utility function (sufficient for generating single-peakedness) not guaranteed, e.g. optimal income taxes.

More general sufficient conditions  $\Rightarrow$  Single-crossing  
(Gans-Smart, 1996)

### Definition: Single-crossing property

The preferences of voters in  $V$  satisfy the single-crossing property when the following statement is true: if  $q > q'$  and  $\alpha^{i'} > \alpha^i$  or if  $q < q'$  and  $\alpha^{i'} < \alpha^i$  then  $W(q; \alpha^i) \geq W(q'; \alpha^i) \Rightarrow W(q; \alpha^{i'}) \geq W(q'; \alpha^{i'})$ .

## Theorem

If the preferences of voters in  $V$  satisfy the single-crossing property, a Condorcet winner always exists and coincides with the bliss point of the voter with the median value of  $\alpha^i$ .

- Single-peakedness voters allow to rank voters according to their individually preferred policy.
- Single-crossing monotonicity of preferences allow to rank voters according to their individuals types.

Verify single-crossing is easy: Spence-Mirrlees condition on marginal rates of substitution.



# Multidimensional Policy - Unidimensional Conflict

Definition: Intermediate preferences (Grandmont, 1978)

Voters in the set  $V$  have intermediate preferences if their indirect utility function  $W(q, \alpha^i)$  can be written as:

$$W(q; \alpha^i) = J(q) + K(\alpha^i)H(q),$$

where  $K(\alpha^i)$  is monotone in  $\alpha^i$ , for any  $H(q)$  and  $J(q)$  common to all voters.

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Intermediate preferences: voter heterogeneity is limited in that voters' preferences for a multidimensional policy can be projected on a unidimensional space in which different voters can be ordered by their type.

## Theorem

If voters in  $V$  have intermediate preferences, a Condorcet winner exists and is given by  $q(\alpha^m)$ .

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Intermediate preferences: Poole and Rosenthal (1991) this (almost) holds for U.S. congressmen for the traditional left to right ideology.

# Multidimensional Policy

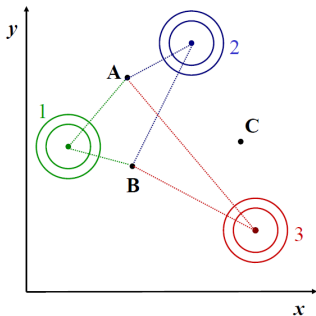
- Spatial voting models: Representation of preferences as some measure of the distance from the bliss point

E.g.  $\|q - \alpha^i\|$  or  $(q - \alpha^i)^\alpha$

- When does an equilibrium exist?

“Median in all directions”: a composite-policy such that the voters are splitted in two even parts according to any policy dimension.

## Spatial Representation of Preferences



Condorcet Cycles:

	1	2	3
A to B	+	-	+
B to C	-	+	+
C to A	+	+	-

# Nonexistence of Condorcet winner

- Serious issue in political economy

E.g. nonexistence in redistributive politics game.

Sincere voting ( $A2$ ) is restrictive if open-agenda process ( $A3$ ) does not imply convergence to Condorcet winner.

- End of political economy?

Restricting institutions: E.g.

Delegation of policy choice to elected representatives  $\Rightarrow$  relax  $A1$ .

Restricted agenda  $\Rightarrow$  relax  $A3$ .

Strategic voting not an issue if two policy alternatives: all voters vote sincerely faced with only two policies  $\Rightarrow$  relax  $A2$ .

1. Motivation of politicians: when policy-makers play a role in political process *their* preferences matter

- Opportunistic
- Partisan

2. Timing of Policy Choice

- Pre-election politics (Commitment)
- Post-election politics (No Commitment)



## 1. Legislative models:

Post Electoral Politics: decision making rules, agenda setting, allocation of policy jurisdiction, etc.

(a) Structure induced equilibrium (Shepsle, 1979)

(b) Agenda setter (Romer-Rosenthal, 1978; Baron-Ferejhon, 1989)

2. Interest group models / lobbying:

Contributions, informational asymmetries, etc.

(a) Becker (1983, 1985)

(b) Grossman-Helpman (1994)

### 3. Electoral models:

Electoral competition between two candidates, distribution of voters preferences, etc.

- (a) Downsian model (Downs, 1957)
- (b) Probabilistic voting (Coughlin and Nitzan, 1981; Ledyard, 1984; Dixit-Londregan, 1996)
- (c) Citizen candidate (Besley-Coate, 1997; Osborne-Slivinki, 1996)

# Take away

- Classical results from social choice and voting theory tell us we cannot hope for a general model of universal applicability.  
⇒ Case-by-case approach
- Dimension of policy key  
⇒ If all issues can be ranked according to one dimension: existence of equilibria + median voter type results in Downsian electoral competition.  
⇒ If multi-dimensional: assumptions about the policy process (preferences of policy-makers matter).

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