Political Economy

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École Polytechnique - CREST

Master in Economics

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Schedule: Every Wednesday 08:30 to 11:45

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 following lectures:

1. background for political economy
2. **introduce alternative work-horse models of policy choice**
3. **illustrate political forces that influence policy**

Electoral competition

- Two-party electoral competition in representative democracy
- Unidimensional conflict: Simple model of public finance
- Opportunistic candidates
- Commitment to a policy ahead of elections

Models of preelection politics with opportunistic politicians.

A Simple Model of Public Finance: Size of government

Benchmark environment:

- Continuum of voters population size (mass) of N
- Type J consumer/voter quasi-linear preferences:

$$w^J = c^J + H(g),$$

  H concave and increasing function, g publicly provided goods same provision to everybody: $g = g^J, \forall J$.

- Common income tax with rate τ (i.e., non-targeted policy)

$$c^J = (1-\tau)y^J.$$

Income distribution only source of preference heterogeneity:

- $y^J \sim_{i.i.d.} F(.)$ such that $E(y^J) = \bar{y}, F(y^m) = \frac{1}{2}, y^m \leq \bar{y}$.
- F discrete: $\mathcal{J}$ groups $J = 1, .., \mathcal{J}$, where $y^1 < .. < y^{\mathcal{J}}$
- population shares $\frac{N^J}{N} = \alpha^J < \frac{1}{2}, \sum_{J=1}^{\mathcal{J}} \alpha^J = 1$

  at times, specialize to $\mathcal{J} = 3$ with $y^L < y^m < y^R$ and $\alpha^J < \frac{1}{2}$.

Government budget:

$$\tau \sum_J \alpha^J y^J = \tau \bar{y} = g,$$

treat g as the one-dimensional policy (a scalar)

Policy preferences differ by (relative) income alone:

$$W(g, y^J) = (\bar{y} - g)\frac{y^J}{\bar{y}} + H(g),$$

by voter J optimum (i.e. $W_g(g, y^J) = 0$), we have

$$g^J = H_g^{-1}\left(\frac{y^J}{\bar{y}}\right) \equiv G\left(\frac{y^J}{\bar{y}}\right).$$

- G is monotonically decreasing in income so preferences well-behaved

  W^J concave (as H is) and single peaked in policy

  W^J also such that single-crossing holds

$\Rightarrow$ unique Condorcet winner exists $g^m = G\left(\frac{y^m}{\bar{y}}\right)$.

Example of general class of policy problems

- one-dimensional, non-targeted policies give rise to similar monotonic policy preferences (under the right conditions)

⇒ many such problems have been studied in political economics

Benchmark: Optimum for utilitarian *SWF*

- maximize $SWF = \sum_J \alpha^J W^J(g) = W(g) = (\bar{y} - g) + H(g)$

  FOC: $W_g(g) = 0 \Leftrightarrow H_g(g) = 1$

$\Rightarrow$ $g^* = G(1)$

Downsian electoral competition: Downs (1957)-Hotelling (1929)

Standard maintained assumptions:

(i) Two candidates (parties): $C = \{A, B\}$.

(ii) Everybody vote sincerely

(iii) Plurality (winner-takes-all) election.

(iv) Politicians simultaneously commit to electoral platforms: g_A, g_B.

(v) Politicians maximize expected "ego rents": $p_C R$ given

$$p_A = P(g_A, g_B) = Prob[\pi_A \geq \frac{1}{2} | g_A, g_B],$$

$$p_B = 1 - p_A,$$

where π_A is candidate A's vote share.

Electoral competition: Size of government

Optimal voting behavior: voter i supports A if $W^J(g_A) > W^J(g_B)$: monotonicity $\Rightarrow$

$$P(g_A, g_B) = \begin{cases} 0 & \text{if} \quad W^M(g_A) < W^M(g_B) \quad \text{as} \quad \pi_A < \frac{1}{2} \\ \frac{1}{2} & \text{if} \quad W^M(g_A) = W^M(g_B) \quad \text{as} \quad \pi_A = \frac{1}{2} \\ 1 & \text{if} \quad W^M(g_A) > W^M(g_B) \quad \text{as} \quad \pi_A > \frac{1}{2} \end{cases}$$

Note discontinuity of $P(g_A, g_B)$, for any g_A, g_B such that $W^M(g_A) = W^M(g_B)$

Electoral equilibrium

Median voter theorem:

Unique Nash Equilibrium such that $g_A = g_B = g^m = G\left(\frac{y^m}{\bar{y}}\right)$.

- Positive implications (comparative statics):

  larger government, in cross-sectional data, if more inequality, as measured by $\frac{y^m}{\bar{y}}$

  growth of government, in time-series data, if relative income of pivotal voter falls

$\Rightarrow$ Number of testable predictions

- Normative implications

  Majority wants higher spending than utilitarian planner:

$$g^* = G(1) < G\left(\frac{y^m}{\bar{y}}\right) = g^m.$$

Application: Ideology

Single Issue - Two Candidates Election

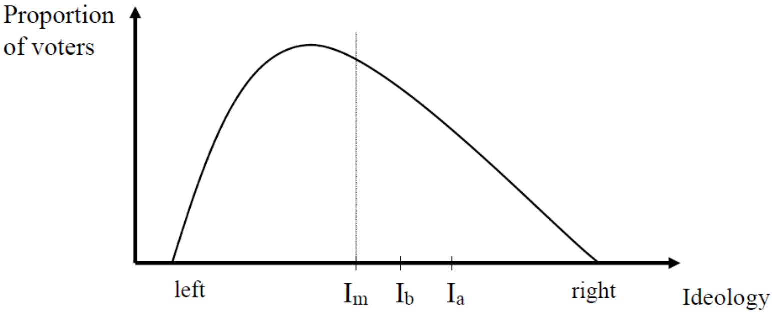
- Election: majority voting for political candidates (or parties)

  Two opportunistic candidates who chose political platform (or ideology)

  Voters have single-peaked preferences and only care about the ideology/political platform: Voting decision depends only on the single issue at stake

  $\Rightarrow$ Given the voter's preferences, candidates position themselves on this issue so that they can win the election.

  Political outcome: both candidates select as their platform the ideology of the median voter.


Proportion of voters
left
I_m
I_b
I_a
right
Ideology

- Result: Party A and B converge towards I_m - the ideology of the median voter
- Implication: “Policy moderation” - both parties move towards moderate positions (ideology) and away from extreme
- Evidence: In two candidates (parties) systems, do we observe some support for moderate and similar positions?

Empirical Evidence

- There have been many attempts to test the Median Voter Theorem.
- One of the most convincing is the effort by Gerber and Lewis ("Beyond the Median: Voter Preferences, District Heterogeneity, and Political Representation" 2004 *JPE*).
- They use voting data from Los Angeles County to estimate the distribution of voter ideologies district by district.
- In particular, they have votes on both ballot propositions and candidate elections which allows them to do a convincing job of estimating voter ideologies.

- They find little support for the idea that the ideology of winning candidates should match the ideology of the median voter in their constituency.
- In particular, the ideology of winning candidates can diverge significantly from the median voter's ideology in heterogeneous districts (i.e., districts with a lot of variance in citizen ideologies).
- Winning Republicans are to the right of the median voter in their district, while winning Democrats are to the left.
- This is consistent with casual empiricism and the findings of most who have looked carefully at the issue.

- The one exception is a recent paper by Ferreira and Gyourko ("Do Political Parties Matter? Evidence from U.S. Cities" 2010 *QJE*).
- They compare policies in cities with Republican and Democrat mayors.
- They use a regression discontinuity design which compares policies in cities which elected a Democrat mayor by a very small margin with those who elected a Republican mayor by a very small margin.
- The idea behind this research design is that these two groups of cities should be basically quite similar, except for the partisan affiliation of the mayor.

- If the Median Voter Theorem is right, both Democrat and Republican mayors should implement basically the same policies.
- This means that there should be no difference between the policies in these two groups of cities, which is what they find.

Application: Endogenizing the distortions from taxes

- Romer (1975), Roberts (1977), Meltzer and Richard (1981).
- Static economy with a single consumption good and a single input (labor).
- A continuum $[0,1]$ of individuals.
- Each of them has one unit of time that they can use for work ℓ_i or leisure x_i so that $x_i = 1 - \ell_i$.
- Individual productivity $\theta_i \sim_{i.i.d.} F(.)$ is the unique source of heterogeneity $y_i = \theta_i(1 - x_i)$.
- Redistribution program: lump sum redistribution b per individual financed by a proportional income tax τ.

Timing

1. Two office-seeking parties each propose a platform (τ_p, b_p) that satisfies budget balance.
2. Elections take place. The winning redistribution program (τ, b) is applied.
3. Citizens choose how much to work and consume taking (τ, b) as given.

Individual Preferences

- We assume quasi-linear preferences:

$$u(c, x) = c + v(x)$$

  - $v'(.) > 0$, $v'(0) > 1$ and $v''(.) < 0$.
  - Quasi linearity assumption important? Boyer and Bierbrauer (2017).

- The budget constraint of individual i is

$$c_i \leq \theta_i(1 - \tau)(1 - x_i) + b$$

It is binding.

Individual Behavior

- Hence the program of the consumer/worker is:

$$V(b,\tau,\theta_i) \equiv max_{x_i \in [0,1]}\ b + \theta_i(1-\tau)(1-x_i) + v(x_i).$$

- Topki's theorem (could use implicit function theorem) $\Rightarrow$ $x^* \uparrow \tau \downarrow \theta_i$, independent of b (quasi-linearity).
  - More productive individuals work more.
  - Individuals work less when taxes are higher.

- Envelope theorem $\Rightarrow$
  - $V_b = 1 > 0$
  - $V_\tau = -\theta_i\,(1 - x^*(\tau,\theta_i)) \leq 0$
  - $V_{\theta_i} = (1-\tau)\,(1 - x^*(\tau,\theta_i)) \geq 0.$

Voters' Preferences

- Politicians propose budget-balanced platforms:
  $b \leq \tau \int \theta \left(1 - x^*(\theta, \tau)\right) dF(\theta)$
- What are the preferences of the voters over feasible platforms?
- Program of the voter:

$$max_{(\tau,b)} \; V(b, \tau, \theta) \;\; \text{s.t.} \;\; b \leq \tau \int \theta \left(1 - x^*(\theta, \tau)\right) dF(\theta)$$

- If (b, τ) and (b', τ) are feasible with $b > b'$, then $(b, \tau) \succ^{mv} (b', \tau)$ (because $V_b = 1 > 0$).
- Hence office seeking only propose platforms such that the budget constraint is binding (other policies are dominated).

Voters

- Hence the program of the voters over undominated policies is

$$max_{\tau\in[0,1]} V\left(\underbrace{\tau\int\theta\left(1-x^*(\theta,\tau)\right)dF(\theta)}_{b},\tau,\theta_i\right)=W(\tau,\theta_i).$$

- Voters' preferences over feasible tax schedules are single-crossing in (b,τ) if $V(b,\tau,\theta_i)$ satisfies the Spence-Mirrlees condition; namely if voters' marginal rates of substitution between b and τ are globally increasing in θ_i: $-\frac{V_\tau(b,\tau,\theta_i)}{V_b(b,\tau,\theta_i)}$ is increasing in θ_i.

Equilibrium policy

Hence median voter theorem holds

$\Rightarrow$ Both parties propose $\hat{\tau} = \tau^*(\theta_m)$ where $\theta_m = F^{-1}(1/2)$, and $\hat{b} = \hat{\tau} \int \theta \left(1 - x^*(\theta, \hat{\tau})\right) dF(\theta)$.

Lessons

- The size of redistribution reflects the preferences of the "middle class" (the median voter).
- Note that the median voter is also the voter with median pre-tax income $y^*(\theta_i) = \theta_i(1 - x^*(\theta_i)) \uparrow \theta_i$.
- Extending the franchise leads to higher taxes/larger redistribution programs.

Redistribution and median voter: see Acemoglu et al. (2014) *Handbook of Income Distribution*

Other characteristics

- An influential contribution is by Groseclose ("A Model of Candidate Location When One Candidate Has a Valence Advantage 2001 *AJPS*) who assumes that candidates have different valence characteristics.
- A valence characteristic is an exogenous characteristic like honesty, good looks, or intelligence which all voters value.
- Formally, valence characteristics are introduced by assuming that a voter with ideology i obtains utility $u(i_C, i) + v_C$ if candidate C is elected where v_C measures candidate C's valence.
- It turns out that if one candidate has a valence advantage, this can change the equilibrium quite significantly.

A Simple Model of Public Finance: Composition of government

Back to Simple Model. Now Group J members: no within- or across-group income heterogeneity $y^J = y, \forall J$

$$w^J = c^J + H(g^J),$$

g^J per-capita spending on group J no spillovers $(g^J) \equiv \mathbf{g}$ multi-dimensional and targeted policy (a vector).

- Interpretation: J defined by preferences, occupation, location,...

Benchmark: Consider utilitarian optimum *SWF*

- maximize $SWF = \sum_J \alpha^J w^J$ subject to $\sum_J \alpha^J (g^J + c^J) = y$

  FOC: $H_{g^J}(\mathbf{g}^*) = 1$

$\Rightarrow$ could be implemented by decentralized spending and financing

  each J internalizes full cost for g^J

Centralized government budget

- $\mathbf{g}$ financed by common tax: $c^J = y - \tau$,

$$\sum_J \alpha^J g^J = \tau$$

Policy preferences

$$w^J = y - \alpha^J g^J - \sum_{I \neq J} \alpha^I g^I + H(g^J) = W(g^J),$$

each J internalizes only share $\frac{N^J}{N} = \alpha^J$ of cost for g^J.

- preferences ill-behaved, do not satisfy monotonicity

$\Rightarrow$ no Condorcet winner exists for $\mathbf{g}$.

Example of general class of policy problems: most policies can be thought of as multi-dimensional and targeted initially, such problems were considered very problematic in political economics.

Non-existence of equilibrium

- discontinuity of $p_A = P(g_A, g_B)$ is too severe

  for any g_B, A can always find g_A that raises $P(g_A, g_B)$.

$\Rightarrow$ without effective monotonicity in one dimension, can't split electorate in half

$\Rightarrow$ cycling, Condorcet paradox: this existence problem thought fatal in early social choice

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