Gov 2006: Formal Political Theory II
Section 10

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Today

PSET practice!

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- Political regimes: parliamentary vs presidential
  - Combining insights from prior weeks (comparative institutions + legislative bargaining)
  - Introducing core model for PSET 8 Q1 & Q2

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- Political regimes: parliamentary vs presidential
  - Combining insights from prior weeks (comparative institutions + legislative bargaining)
  - Introducing core model for PSET 8 Q1 & Q2
- Citizen-candidate model
  - Review the basic set-up
  - Hints for PSET 8 Q3 & Q4

Political regimes: PT 10.6.1

PT Exercise 10.6.1: A model with a prime minister

Set-up

- 3 groups of voters $J = 1, 2, 3$, each of mass 1
- Each group represented by a single legislator $l = 1, 2, 3$
- Prime minister P heads the government

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Voters in district J have preferences

$$w^J = c^J + H(g) = y - \tau + f^J + H(g)$$

where τ denotes taxes, f^J denotes transfers to group j, and g denotes a general public good benefiting all voters.

Political regimes: PT 10.6.1

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All items in the government budget constraint must be non-negative ($\tau, g, f, r \geq 0$). Let $\mathbf{q}$ be the full policy vector.

Political regimes: PT 10.6.1

Timing

1. Voters determine their (publicly-known) reelection strategies, setting a cutoff ϖ_J.
2. Prime ministers proposes policy vector $\mathbf{q}$
3. Legislature votes on $\mathbf{q}$. If a majority ($n \geq 2$) support, it is implemented and the PM stays in office. If not, the PM loses office and a default policy $\bar{\mathbf{q}}$ is implemented, with $\tau = r_I = \bar{r} > 0$ and $g = f^J = 0$.
4. Voters observe the outcome of the legislative decision and all elements in the policy vector. Elections are held.

Political regimes: PT 10.6.1

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Formally, voters set the probability of reelection p_I based on a simple retrospective voting rule:

$$p_I = \begin{cases} 1 & \text{iff} \quad W^J(\mathbf{q}) \geq \varpi^J \\ 0 & \text{otherwise} \end{cases}$$

Voters set the cutoff ϖ^J to maximize their utility.

Political regimes: PT 10.6.1

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Solution:

- PM only needs 2 legislators
- Given the voters' strategies $(\varpi_1, \varpi_2, \varpi_3)$, the PM will pick districts with lowest cutoff, leading to Bertrand competition.
- WLOG, assume districts 1 and 2 form the coalition. In equilibrium, we must have $\varpi_1 = \varpi_2 = \varpi^* \leq \varpi_3$.
- Bertrand competition $\implies$ zero transfers in equilibrium.

Political regimes: PT 10.6.1

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Solution (cont'd):

- To get their votes, the PM needs to offer legislators 1 and 2 enough rents to make them indifferent between supporting her proposal and getting reelected, or taking the default rents and losing office: $\gamma r_i + R = \gamma \bar{r}$ for $i = 1, 2$.
- So $r_i^* = \max\{\bar{r} - \frac{R}{\gamma}, 0\}$ for $i = 1, 2$.

Political regimes: PT 10.6.1

Solution (cont'd):

The PM solves the following problem:

$$\begin{aligned} \max \ & \gamma r_p + R \\ s.t. \ & f_1 + y - \tau + H(g) \geq \varpi^* \\ & f_2 + y - \tau + H(g) \geq \varpi^* \\ & 3\tau = g + f + r \end{aligned}$$

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$$\implies f_1 = f_2 = 0, \quad \tau^* = y, \quad H_g(g^*) \geq \frac{1}{2}, \quad \varpi^* = H(g^*)$$

Political regimes: PT 10.6.1

Bonus question: How does the provision of public goods in this equilibrium compare to the social optimum?

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Answer: Public goods are underprovided. The social planner sets the marginal benefit to each group equal to the marginal social cost, i.e. $H_g(g^{opt}) = \frac{1}{3}$.

Given that $H(\cdot)$ is strictly concave, we have that

$$g^* = H_g^{-1}\left(\frac{1}{2}\right) < H_g^{-1}\left(\frac{1}{3}\right) = g^{opt}$$

Political regimes: PT 10.6.2

PT Exercise 10.6.2: Adding a president

Same set-up as before, except:

- we have a President, P, instead of a Prime Minister

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  - a_τ for the "finance committee"
  - a_g for the "expenditure committee"

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PT Exercise 10.6.2: Adding a president

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- we have a President, P, instead of a Prime Minister
- we have two separate agenda setters:
  - a_τ for the "finance committee"
  - a_g for the "expenditure committee"
- President can veto the allocation decision of Congress

Political regimes: PT 10.6.2

Timing:

1. 2 out of the 3 legislators are appointed agenda setters for the "finance committee" a_τ and the "expenditure committee" a_g.
2. Voters set optimal cutoff utilities ϖ_J, conditional on their legislator's status.
3. a_τ proposes a tax rate, τ.
4. Congress votes on the tax proposal. If it is not approved, the default tax rate is $\bar{\tau} > 0$.
5. a_g proposes g, f^J and r_i (n.b. President can receive rents r_P as well), subject to $3\tau \geq g + f + r$.
6. Congress votes on the allocation proposal. If it is not approved, the default allocation is $g = 0,\ f^J \equiv \tau - r_l \geq 0,\ r_l = \bar{r}$.
7. President decides whether to veto the decision of the Congress. If she does, the default allocation is implemented.
8. Voters observe everything and elections are held. The president is elected in national elections, and the legislators contest in their districts. Assume R to be large.

Political regimes: PT 10.6.2

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In order for public goods to be provided at $g^* > 0$ in equilibrium, a_g must want to be reelected, i.e.:

$$\gamma(g^* - \bar{r}) \leq \gamma r^* + R$$

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RHS $=$ equilibrium payoffs with reelection.
LHS $=$ off-equilibrium payoffs, where a_g appropriates all the taxes $(3\tau = g^*)$ and buys the vote of one other legislator at cost $\bar{r}$.

Political regimes: PT 10.6.2

(A) Construct an equilibrium in which public goods are provided at a level $H_g(g^*) = 1$.

As the question specifies, we can assume R is large. In particular, let's assume R is large enough such that the reelection constraint holds even if equilibrium rents $r^* = 0$.

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$$g^* - \overline{r} - \frac{R}{\gamma} \leq 0$$

Political regimes: PT 10.6.2

(A) Construct an equilibrium in which public goods are provided at a level $H_g(g^*) = 1$.

What cutoff set by the voters would support this equilibrium?

$$\varpi^* = y - \frac{g^*}{3} + H(g^*)$$

for all districts, as well as for the national presidential election.

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Given that a_g will allocate all taxes to the public good, a_τ sets taxes just high enough to finance this: $\tau^* = \frac{g^*}{3}$.

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Why not set taxes higher?

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Given that a_g will allocate all taxes to the public good, a_τ sets taxes just high enough to finance this: $\tau^* = \frac{g^*}{3}$.

Why not set taxes higher? Because a_g will appropriate anything above this in rents to herself.

Political regimes: PT 10.6.2

(B) Show that there are an infinite number of equilibria with $H_g(g^*) = 1$ and positive transfers for the district of a_g.

Note, in part (A), we did not explicitly specify the transfers f_J. In fact, there are infinite equilibria corresponding to different levels of positive transfers to the district of a_g:

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$f^{a_g} = 3x, \;\; f^j = 0, \;$ where $x > 0$

$$\tau^* = \frac{g^*}{3} + x$$

$$\overline{w}^{a_g} = y - \left(\frac{g^*}{3} + x\right) + H\left(g^*\right) + 3x = y - \frac{g^*}{3} + H\left(g^*\right) + 2x$$

$$\overline{w}^j = y - \left(\frac{g^*}{3} + x\right) + H\left(g^*\right), \; \text{for } j \neq a_g$$

Political regimes: PT 10.6.2

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Why is a_g able to extract these transfers?

- Because a_g is always in the coalition that supports the policy in equilibrium.
- So the other two legislators end up in Bertrand competition.
- They have to go along with $a_g{}'s$ proposal if they want any public goods g.

Political regimes: PT 10.6.2

(C) Compare the results of the model with a president and the model without one. Why does the addition of the president not change the equilibria?

Recall that we also did not explicitly consider the presidential veto in our derivation of the equilibrium above!

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(C) Compare the results of the model with a president and the model without one. Why does the addition of the president not change the equilibria?

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Why doesn't the veto matter?

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(C) Compare the results of the model with a president and the model without one. Why does the addition of the president not change the equilibria?

Recall that we also did not explicitly consider the presidential veto in our derivation of the equilibrium above!

Why doesn't the veto matter?

- Because the legislative process already requires the support of voters in two out of the three districts (i.e., a national majority).
- P prefers not to veto since she will be guaranteed reelection (and thus future exogenous rents R)

PSET 8

Looking ahead to PSET 8...

- Q1 considers an infinitely-repreated version of the presidential model
- Q2 looks at a particular subgame of the parliamentary model, when the governing coalition breaks down

Review: citizen-candidate models

Let's review a simplified version of a citizen-candidate model...

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Set-up

- Citizens are differentiated by income y_i
- Any citizen can run as a candidate at cost ε
- Incumbents set the level of taxes (equivalently, public goods), subject to the budget constraint: $\tau y = g$

Review: citizen-candidate models

Let's review a simplified version of a citizen-candidate model...

Timing:

1. Citizens choose whether to run.
2. An election is held. Each citizen votes to maximize their expected utility, given how everyone else votes. Candidate with a plurality wins, ties resolved with a coin toss.
3. Elected candidate sets policy g^P. If nobody runs, a default policy g is implemented.

Review: citizen-candidate models

Solve with...

Review: citizen-candidate models

Solve with... backwards induction! (°□°)

Review: citizen-candidate models

Solve with... backwards induction! (°□°)

What policy does the winning candidate choose?

Review: citizen-candidate models

Solve with... backwards induction! (°□°)

What policy does the winning candidate choose? No commitment, so pick your bliss point:

$$
\begin{aligned}
u_i &= y^i(1-\tau) + H(g) \\
&= y^i\left(1 - \frac{g}{y}\right) + H(g) \\
\text{FOC:} &- \frac{y^i}{y} + H_g(g) = 0 \\
\implies g^P &= H_g^{-1}\left(\frac{y^P}{y}\right)
\end{aligned}
$$

Review: citizen-candidate models

Next: how do citizens vote?

Review: citizen-candidate models

Next: how do citizens vote?

- Citizens can arrange candidates according to the distance between their bliss points
- So in a 1- or 2-candidate election, the candidate who wins the median voter wins the election
- In a 3+ candidate election, the median voter may not be pivotal since we have assumed that citizens vote strategically

Review: citizen-candidate models

Finally: who chooses to run?

Review: citizen-candidate models

Finally: who chooses to run?

- A citizen only chooses to run if running gives a higher expected utility, net of entry costs, than not running, given other citizens' entry decisions

PSET 8

Looking ahead to PSET 8...

- Q1 considers an infinitely-repeated version of the presidential model
- Q2 looks at a particular subgame of the parliamentary model, when the governing coalition breaks down
- Q3 looks at equilibria of the citizen-candidate model for specific values of ε
- Q4 explores what happens in the citizen-candidate model when voters' preferences do not satisfy the single-crossing property