ECON 4921: Lecture 11

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Roadmap

1. Introduction
2. Institutions and Economic Performance
3. The Firm
4. Organized Interest and Ownership
5. Complementarity of Institutions
6. Institutions and Commitment
7. Agency problems: Voters- Politicians-Bureaucrats
8. **Fiscal Federalism**
9. System Competition

Fiscal federalism

- Which functions are best centralized and which are best placed in the sphere of decentralized levels of government?
  - Traditional understanding: Oates decentralization theorem.
    - Trade-off: Spillovers vs. Preference matching
    - Important ass. : uniform level of spending (CEN)
  - Besley and Coate analyze a richer political economy setting at the center

Besley and Coate

- Another variant of common pool problem:
  - Public spending determined by the national legislature
  - Citizens of different jurisdictions have conflicting interests
  - Spending benefits primarily people living in one district. Costs borne collectively.

The model

- Two districts,
- # inhabitants normalized to 1 within each district
- Two local public goods: $g1$, $g2$
- One private good: x
- Production of one unit of either g requires p units of x

Preferences

- Public good preference parameter: λ

$$x + \lambda[(1-\kappa)\ln g_i + \kappa \ln g_{-i}].$$

  - λ varies across districts and across citizens within districts
  - Within each district: $[0, \overline{\lambda}]$
  - Mean and median type in district i : m_i , $m_1 \geq m_2$

- Degree of spillovers $\kappa \in [0, 1/2]$
  - Equal for all citizens
  - Citizens only care about own public good: $\kappa = 0$
  - Citizens care equally about both public goods: $\kappa = 1/2$

Alternative systems

- Decentralization:
  - Each g decided on locally
  - Financed by head tax on local citizens: pg_i
- Centralization:
  - Both g decided in national legislature
  - Financed by head tax on all citizens: $\frac{p(g_1 + g_2)}{2}$

Outline

- **Normative benchmark**
- Standard FGFF approach (Oates)
- Political economy SGFF approach (Besley and Coate)

Normative benchmark

- Aggregate public good surplus:

$$S(g_1, g_2) = [m_1(1-\kappa) + m_2\kappa] \ln g_1 + [m_2(1-\kappa) + m_1\kappa] \ln g_2 - p(g_1 + g_2)$$

- FOC gives:

$$(g_1, g_2) = \left(\frac{m_1(1-\kappa) + m_2\kappa}{p}, \frac{m_2(1-\kappa) + m_1\kappa}{p} \right)$$

- m1>m2 → g1>g2 (for k<1/2)

Outline

- Normative benchmark
- **Standard FGFF approach (Oates)**
- Political economy SGFF approach (Besley and Coate)

The standard approach (Oates72)

- Decentralized solution:

$$g_i^d = \text{argmax}_{g_i}\{m_i[(1-\kappa)\ln g_i + \kappa \ln g_{-i}^d] - pg_i\}, \quad i \in \{1,2\}.$$

- FOC gives:

$$(g_1^d, g_2^d) = \left(\frac{m_1(1-\kappa)}{p}, \frac{m_2(1-\kappa)}{p}\right)$$

- Similar to normative benchmark in the case that there are **no spillovers**.
- With spillovers: underprovision

The standard approach (Oates72)

- Centralized solution, uniform solution:

$$g^c = \arg \max_g \{[m_1 + m_2] \ln g - 2pg\}$$

- FOC gives:

$$g^c = \frac{m_1 + m_2}{2p}$$

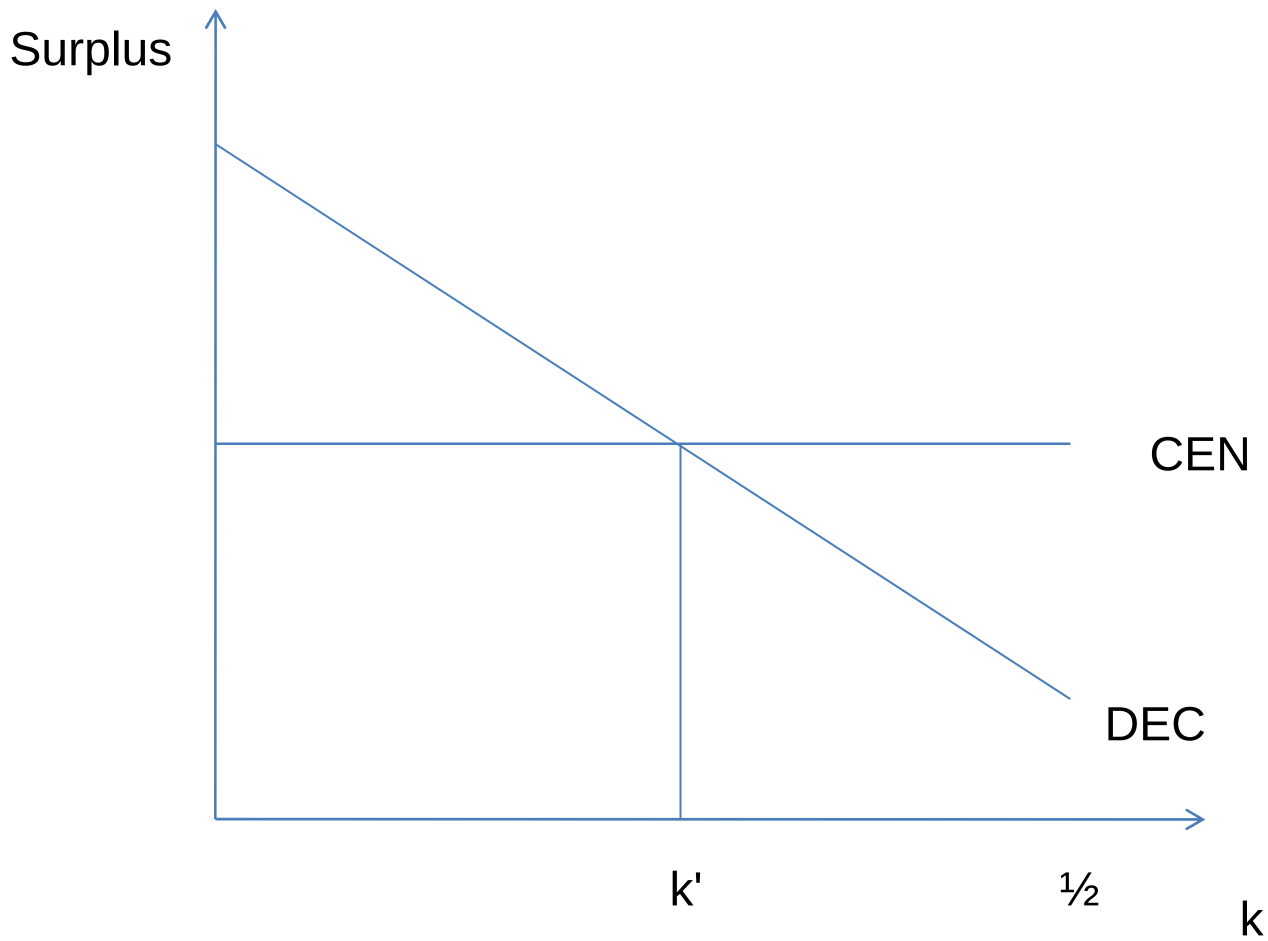
- Similar to normative benchmark in the case that there are **no preference heterogeneity**.
- With preference heterogeneity (m1>m2):
  - Underprov. in 1, Overprov. in 2. (except when k=1/2)

Oates' decentralization theorem

	Externalities? (k>0)	Diff regions? (m1>m2)	Decentralized vs centralized provision?
1	NO	NO	Irrelevant
2	NO	YES	Decentralized
3	YES	NO	Centralized
4	YES	YES	Unclear

Concerning case 4

- Surplus under decentralization is decreasing in the extent of spillovers (k)
- There exists a critical level of k where
  - Below k': decentralization dominates
  - Above k': centralization dominates


Surplus
CEN
DEC
k'
½
k

Without uniform national solution

- If (benevolent) central government where permitted to choose different levels of g for the two districts.
  - →Centralization would produce at least as much surplus as decentralization.
  - →Always superior in the presence of spillovers.

Outline

- Normative benchmark
- Standard FGFF approach (Oates)
- **Political economy SGFF approach (Besley and Coate)**

Citizen-candidate model

- Each district choose a representative to send to national legislature.
  - We focus on the non-cooperative solution (section 4 in Besley and Coate).
- In national legislature candidates make choices in line with own preferences.

Timing in decentralized system

1. Elections
2. Elected citizen implement policy (simultenously in both districts)

Backward induction, stage 2

- Let λi denote representative from district i's preferences:

$$g_i(\lambda_i) = \arg\max_{g_i} \{\lambda_i[(1-\kappa)\ln g_i + \kappa \ln g_{-i}(\lambda_{-i})] - pg_i\} \quad \text{for } i \in \{1,2\}.$$

- FOC gives:

$$(g_1(\lambda_1), g_2(\lambda_2)) = \left(\frac{\lambda_1(1-\kappa)}{p}, \frac{\lambda_2(1-\kappa)}{p}\right)$$

Backward induction, stage 1

- Voter of type λ consider which citizen to vote for. This voter's public goods surplus level:

$$\lambda\left[(1-\kappa)\ln\frac{\lambda_i(1-\kappa)}{p}+\kappa\ln\frac{\lambda_{-i}(1-\kappa)}{p}\right]-\lambda_i(1-\kappa)$$

(first term: benefits. Second term: costs, when inserting for g from stage 2)

Maximization of this expression wrt to λi:

→ voters get max surplus when λ= λi

Outcome in decentralized solution

- Single peaked* preferences: $(\lambda_1^*, \lambda_2^*) = (m_1, m_2)$

→ $$(g_1, g_2) = \left(\frac{m_1(1-\kappa)}{p}, \frac{m_2(1-\kappa)}{p}\right)$$

* Given any two types λ_i and λ_i' such that $\lambda_i < \lambda_i' < \lambda$ or $\lambda < \lambda_i' < \lambda_i$, type λ citizens always prefer type λ_i'

Timing in centralized system

1. Elections to national legislature
2. National legislature choose g1, g2
   - Minimum winning coalition (MWC)
     - With prob. ½ : $(g_1^1(\lambda_1), g_2^1(\lambda_1))$
     - With prob. ½ : $(g_1^2(\lambda_2), g_2^2(\lambda_2))$

Backward induction, stage 2

$$(g_1^i(\lambda_i), g_2^i(\lambda_i)) = \arg\max_{(g_i, g_{-i})} \left\{ \lambda_i[(1-\kappa)\ln g_i + \kappa \ln g_{-i}] - \frac{p}{2}(g_i + g_{-i}) \right\}$$

- FOC gives:

$$(g_i^i(\lambda_i), g_{-i}^i(\lambda_i)) = \left(\frac{2\lambda_i(1-\kappa)}{p}, \frac{2\lambda_i \kappa}{p} \right), \quad i \in \{1, 2\}.$$

Backward induction, stage 1

- Voter of type λ consider which citizen to vote for. This voter's public goods surplus level:

$$\frac{1}{2}\left\{\lambda\left[(1-\kappa)\ln\frac{2\lambda_i(1-\kappa)}{p}+\kappa\ \ln\frac{2\lambda_i\kappa}{p}\right]-\lambda_i\right.$$
$$\left.+\lambda\left[(1-\kappa)\ln\frac{2\lambda_{-i}\kappa}{p}+\kappa\ \ln\frac{2\lambda_{-i}(1-\kappa)}{p}\right]-\lambda_{-i}\right\}.$$

First term: benefits if in MWC

Second term: costs if in MWC

Third term: benefits if NOT in MWC

Fourth term: costs if NOT in MWC

Maximization of this expression wrt to λi:

→ voters get max surplus when λ= λi

Outcome in centralized solution

- With prob. ½ : $(2\lambda_1^*(1-\kappa)/p, 2\lambda_1^*(\kappa)/p)$
- With prob. ½ : $(2\lambda_2^*\kappa/p, 2\lambda_2^*(1-\kappa)/p)$

- And with single-peaked preferences: $(\lambda_1^*, \lambda_2^*) = (m_1, m_2)$

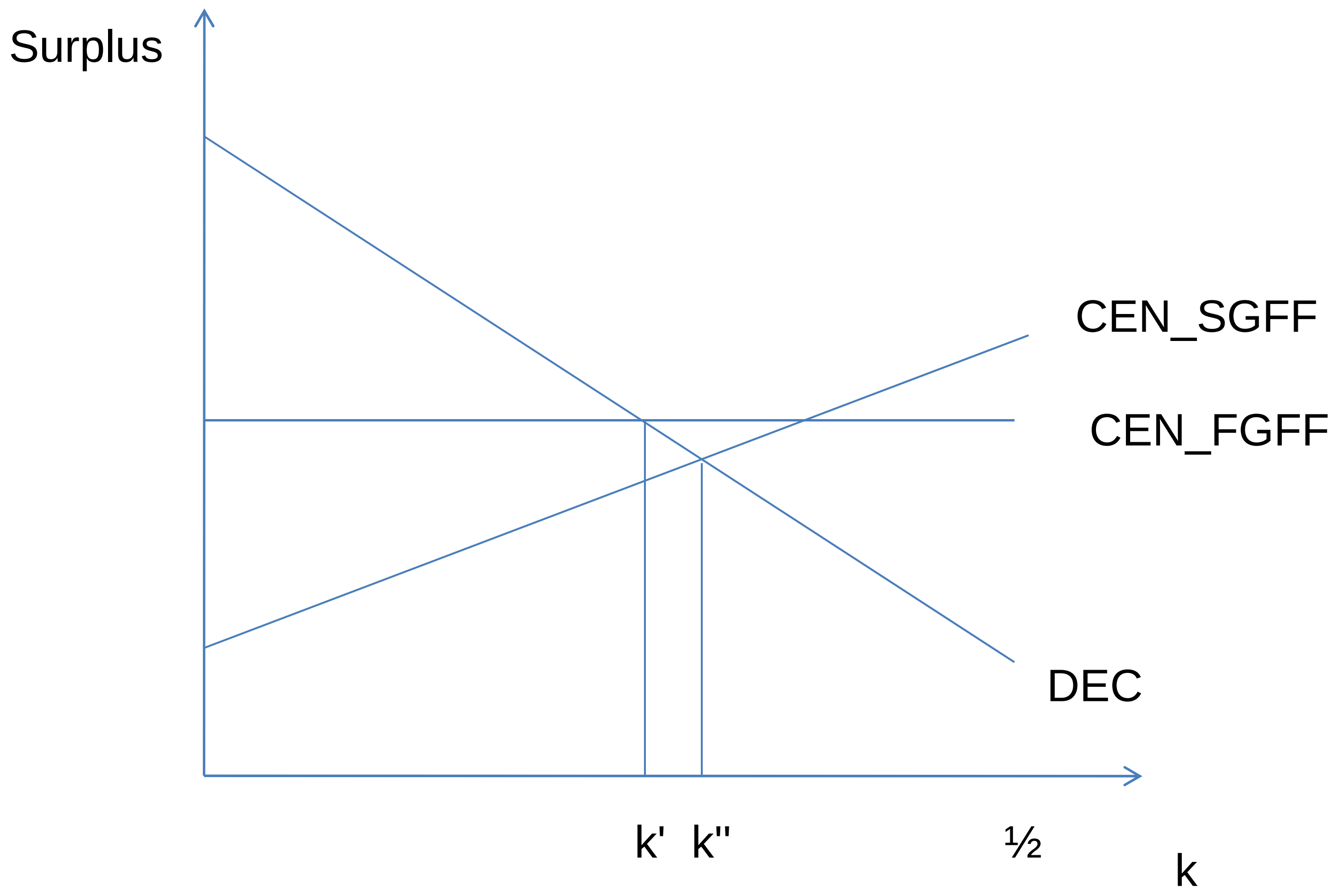
Outcome in centralized solution

This result highlights the two principal drawbacks of centralization with a non-cooperative legislature:

- *Uncertainty:* each district is unsure of the amount of public good that it will receive, reflecting the uncertainty in the identity of the minimum winning coalition.
- *Misallocation:* public spending across the districts is skewed towards those inside the winning coalition.

Outcome in centralized solution

- Misallocation problem worse when spillovers are low.
  - High spillovers alleviate selfishness of MWC
- Only when …
  - m1=m2=m (identical regions)
  - k=1/2 (complete spillovers)
- … does the centralized solution provide efficient levels of local public services.
- In FGFF only one of the conditions are necessary.


Surplus
CEN_SGFF
CEN_FGFF
DEC
k'
k''
½
k

Weaker case for centralization

- In SGFF centralization depends on k.
  - Intuition: service provision skewed towards MWC. Problem is less severe the larger the extent of spillovers.
- Weakens the case for centralization
  - k’’>k’