The Timing of Elections: A Disciplining Device against Soft Budget Constraints in Federations?

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Introduction

- the paper deals with the soft budget problem in federations

- because of non-commitment, search for institutions alleviating this problem
  - e.g. nature of public spending or the funding source (Breuillé, Madies, Taugourdeau 2007)

- not investigated: the role of political cycles at different federal levels
Model Idea:

- particularly we ask the question if the soft budget constraint problem is worse if regional and central governments are elected at identical voting dates (symmetric cycles) or if voting dates fall apart (asymmetric cycles)
1 Model (Variables/Set up)

- federation: poor region - eligible for a bailout - and rich regions

consumers

- population of the poor region is normalized to one, and population of the rich region is normalized to $N$

- residents derive at each date $t$ utility from a private good $c_t$, a regional public good $g_t$ and a national public good $G_t$

- we assume a log-linear utility function: $c_t + \gamma_g \ln g_t + \gamma_G \ln G_t$
the central government collects when entering office a non-manipulable head tax $\tau^C$ from all residents (reason: comparability of different regimes) and decides on the distribution of this revenue across the two periods, where $S_1$ denotes spending in period 1 and $S_2 = (1 + N) \tau^C - S_1$

- additionally, the central government decides how to split its revenue across spending for the national public good and a transfer/bailout to the poor region: $S_t = G_t + z_t$

- office term is divided into two subperiods $\rho \in \{1; 2\}$, where $\rho$ refers always to the CG
• payoff: $c_1 + \gamma_g \ln g_1 + (1 + N) \gamma_G \ln G_1 + c_2 + \pi \gamma_g \ln g_2 + \pi (1 + N) \gamma_G \ln G_2$

• choice variables: $S_1, z_1, z_2$

• $\pi > 1$ represents preference for spending at the end of the office term

• we drop utility from private consumption $c_t$ and regional consumption $g_t$ of the $N$ rich regions

• technical assumption to make the problem interesting: $(1 + N) \tau^C$ is not very small ($z_t \geq 0$); but also not very large
the regional government chooses and collects a regional head tax $\tau^R$ when entering office, which is distributed across regional government spending in period 1 and period 2: $\tau^R = s_t + s_{t+1}$

payoff: $c_1 + \gamma_g \ln g_1 + \gamma_G \ln G_1 + c_2 + \pi \gamma_g \ln g_2 + \pi \gamma_G \ln G_2$

we substitute $\tau^R$ by $s_t$ and $s_{t+1}$ (choice variables)

the regional government disregards utility of other residents from national consumption, which creates the soft budget constraint problem
settings

1. social planner (benchmark)

2. symmetric cycles (SC)

3. asymmetric cycles (AC)
2 Social Planner

\[
\max_{S_1, z_1, z_2, s_1, s_2} \sum_{\rho} c_\rho + \gamma_g \ln g_\rho + (1 + N) \gamma_G \ln G_\rho \\
\text{s.t. all budget constraints}
\]

- note: no higher valuation of period 2 spending, i.e. \( \pi = 1 \)

- results:

  - \( g_1 = g_2 = \gamma_g \quad G_1 = G_2 = (1 + N) \gamma_G \)

- intuition: \( \max_s - s + \gamma_g \ln s \rightarrow -1 + \frac{\gamma_g}{s} = 0 \quad \gamma_g = s \)
• total funds spent: $S_1 + S_2 + s_1 + s_2 = 2\left(\gamma_g + (1 + N)\gamma_G\right)$

• by assumption: $\tau^C (1 + N) < 2 \left( (1 + N)\gamma_G + \gamma_g \right)$

• money can freely be shifted across goods

• hence: $s_1 + s_2 = \tau^R = 2 \left( (1 + N)\gamma_G + \gamma_g \right) - \tau^C (1 + N)$

• $s_1 + z_1 = s_2 + z_2 = \gamma_g \quad S_1 = g_1 + G_1 - s_1$
3 Symmetric Cycles: timing

- stage 1: RG chooses $s_1, s_2$/ stage 2: CG chooses $S_1, z_1, z_2$
• interpretation:
  
  – full separation of **distribution** effect and **size** effect:
  
  – distribution, determined by central government

\[
\begin{align*}
\text{period 1} & \quad \frac{1}{1+\pi} \quad g_1 \quad \frac{\gamma_g}{\gamma_g + (1+N)\gamma_G} \\
& \quad G_1 \quad \frac{(1+N)\gamma_G}{\gamma_g + (1+N)\gamma_G} \\
\text{period 2} & \quad \frac{\pi}{1+\pi} \quad g_2 \quad \frac{\gamma_g}{\gamma_g + (1+N)\gamma_G} \\
& \quad G_2 \quad \frac{(1+N)\gamma_G}{\gamma_g + (1+N)\gamma_G}
\end{align*}
\]

• size: \((\tau_C (1 + N) + \tau_R)\), determined by region: disregards \(N \gamma_G\)
• results:

\[- g_1 = \frac{\gamma_g}{\gamma_g + (1+N)\gamma_G} (\gamma_g + \gamma_G) \quad g_2 = \frac{\gamma_g}{\gamma_g + (1+N)\gamma_G} \pi (\gamma_g + \gamma_G)\]

\[- G_1 = \frac{\gamma_G(1+N)}{\gamma_g + (1+N)\gamma_G} (\gamma_g + \gamma_G) \quad G_1 = \frac{\gamma_G(1+N)}{\gamma_g + (1+N)\gamma_G} \pi (\gamma_g + \gamma_G)\]

\[- \tau_C (1 + N) + \tau_R = \frac{(1+\pi)(\gamma_g + (1+N)\gamma_G)(\gamma_g + \gamma_G)}{\gamma_g + (1+N)\gamma_G} = (1 + \pi) (\gamma_g + \gamma_G)\]

\[- \tau^R = (1 + \pi) (\gamma_g + \gamma_G) - \tau^C (1 + N)\]

- remaining variables are residually determined

\[- s_1 + z_1 = \gamma_g \frac{\gamma_g + \gamma_G}{\gamma_g + (1+N)\gamma_G} \quad s_2 + z_2 = \pi \gamma_g \frac{\gamma_g + \gamma_G}{\gamma_g + (1+N)\gamma_G}\]

\[- S_1 = g_1 + G_1 - s_1 \quad S_2 = g_2 + G_2 - s_2\]
4 Asymmetric Cycles: timing

- solving by backwards induction with response functions
1. the choice of $s(t-1)_1$

- response functions: $\frac{\partial S_{(t-1)_1}}{\partial S_{(t-1)_1}} = -1, \frac{\partial S_{t2}}{\partial S_{(t-1)_1}} = 0 \rightarrow$ temporal externality
• $\frac{\partial z(t-1)}{\partial s(t-1)} < 0 \quad \rightarrow \text{regional externality result: } s(t-1) = 0$

2. the choice of $S(t-1)$

• response function: $\frac{\partial s_{t2}}{\partial s_{t2}} = -1$
• hence: it does not pay to shift funds to period 2, therefore it is optimal to keep them in period 1 and to realize the period 1 optimum \( g_1 = \gamma_g, G_1 = (1 + N) \gamma_G \) although \( \pi > 1!! \)

3. the choice of \( s(t+1)_1 = s(t-1)_1 \)

• just interregional externality as in asymmetric cycles

**summary commitment effects:**

<table>
<thead>
<tr>
<th>period where CG enters</th>
<th>period where RG enters</th>
<th>symmetric cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ( \tau(t-1)_1 )</td>
<td>1. ( S_{t2} )</td>
<td>1. ( \tau(t-1)<em>1, \tau</em>{t2}, S(t-1)_1 )</td>
</tr>
<tr>
<td>2. ( S_{(t-1)}_1, z(t-1)_1 )</td>
<td>2. ( \tau_{t2} )</td>
<td>2. ( z(t-1)<em>1, z</em>{t2} )</td>
</tr>
</tbody>
</table>

→ weaker commitment → stronger commitment
• results: generally the agent who moves determines the result

\[- g_1 = \gamma_g \]
\[G_1 = (1 + N) \gamma_G \]
\[- g_2 = \frac{\gamma_g}{\gamma_g + \gamma_G (1 + N)} (\gamma_g + \gamma_G) \]
\[G_2 = \frac{(1 + N) \gamma_G}{\gamma_g + (1 + N) \gamma_G} (\gamma_g + \gamma_G) \]
\[- s_1 = 0 \quad \tau_R = s_2 = 2 \left( \gamma_g + (1 + N) \gamma_G \right) - N \gamma_G - \tau_C (1 + N) \]
\[- S_1 = \gamma_g + \gamma_G (1 + N) \quad S_2 = \tau_C (1 + N) - S_1 \]
\[- z_1 = \gamma_g \quad z_2 = (\tau_C (1 + N) - S_1) - G_2 \]
Summary/Conclusion

• Symmetric cycles
  – regional government determines size of total public expenditures
  – central government determines distribution across public goods

• Asymmetric cycles
  – periods where central government enters office: low commitment and low regional government expenditures, high central government expenditures
– period where regional government enters office: high commitment of central government, high expenditures of regional government, low central government expenditures

- overall: asymmetric cycles yield higher welfare