Nash Equilibria in Models of Fiscal Competition with Unemployment

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Research question:

What policy variable should be implemented by the government under fiscal competition environment where unemployment exists?

Tax rate vs **Public expenditure**

Introduction

- Fiscal competition widely recognized as representing "race to bottom"
- The government is competing not only to encourage investment but also to create employment
- Many theoretical studies investigated the relationship between tax competition and unemployment
- However taxes aren't the only policy instrument the government can compete in the realistic world
- Countries/regions are facing intergovernmental competition for using other policy variable

Model

Existence of unemployment

Region i $\xrightarrow{K}$ **Region j**

- $t_i \uparrow$
  - $K_j \uparrow$: fiscal externality (positive)
  - $K_j \uparrow \Rightarrow L_j$?: employment externality (positive or negative?)

Choice of policy variable

Region i $\xrightarrow{K}$ **Region j**

• $t_i \uparrow$ (tax competition)	• $K_j \uparrow \Rightarrow G_j \uparrow$ $\because$ t_j is given: $\bar{t}_j K_j = G_j$
• $G_i \uparrow (t_i \uparrow)$ (expenditure competition)	• $K_j \uparrow \Rightarrow t_j \downarrow (\Rightarrow K_j \uparrow\uparrow)$: strategic effect $\because$ G_j is given: $t_j K_j = \bar{G}_j$

- N regions: $N \geq 2$
- The population in each region is unity
- Economy-wide capital stock is fixed: $\bar{K}$
- Capital input : K_i (mobile), Labor input: L_i (immobile)
- Capital market: $\sum_{i=1}^{N} K_i = \bar{K}$
- Two goods: X_i (private goods) and G_i (public goods)
- Private goods: perfect competitive markets
- Public goods: $t_i K_i = G_i$ (t_i: tax rate)
- Social welfare function: $U_i(X_i, G_i) = X_i + v(G_i)$
- The regional government chooses **tax rate** or **expenditure level** to maximize social welfare function

Tax vs expenditure competition

Proposition 1:

- *There exists a unique symmetrical tax competition equilibrium and a unique symmetrical expenditure competition equilibrium*
- *These equilibria are characterized as $t^* \gtrless t^\star \Leftrightarrow G^* \gtrless G^\star$*

Proposition 2:

① $t^o > t^* > t^\star, U^o > U^* > U^\star$
② $t^o < t^* < t^\star, U^o > U^* > U^\star$

o: optimal provision of public goods
$*$: tax competition case
$\star$: expenditure competition case

The interpretation of Proposition 2:

- Three effect in this economy
  - Fiscal external effect (positive)
  - Employment external effect (**positive or negative**)
  - Strategic effect in expenditure competition case (positive)

- Employment externality is **positive** or **not too negative**
  - "All effects is positive" or "fiscal external effect and strategic effect dominate employment external effect"
    $\Rightarrow$ Public goods is under-provided (Proposition 2① $t^o > t^* > t^\star$)
- Employment externality is **negative**
  - Employment external effect dominates fiscal external effect and strategic effect
    $\Rightarrow$ Public goods is over-provided (Proposition 2② $t^o < t^* < t^\star$)

Summary of results:

- Tax rates under tax competition are likely to be more competitive than under expenditure
- Governments prefer to choose government expenditure as their strategic variable rather than tax rates