Fiscal Equalization and Yardstick Competition

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	mobility of tax base	voting
Consequence of fiscal competition	Fiscal externalities reduce welfare. *Zodrow/Mieszkowski* (1986)	"Yardstick competition" improves accountability. *Besley/Case* (1995), *Besley/Smart* (2007)
Impact of fiscal equalization	Equalization alleviates externalities. *Wildasin* (1989), *Köthenbürger* (2002), *Bucovetsky/Smart* (2006)	**?**

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Impact of fiscal equalization	Equalization alleviates externalities. *Wildasin* (1989), *Köthenbürger* (2002), *Bucovetsky/Smart* (2006)	*This paper:* **Equalization reduces accountability.**

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- Voters evaluate the incumbent's ability based on observing public good supplies in both jurisdictions.
- Incumbents trade off the immediate gain from rent diversion against the induced loss in election prospects.

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- **Fiscal capacities are imperfectly measured.**

- Therefore, citizens cannot derive fiscal capacities from the observation of public goods supplies.

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Result

The rent taken in a symmetric equilibrium increases in the equalization rate.

The model

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- two jurisdictions $i = 1, 2$
- two periods $1, 2$
- In each jurisdiction an incumbent politician decides on rent extraction in period 1.
- At the end of period 1, in each jurisdiction, citizens either re-elect the incumbent or elect a challenger.
- The winners of the elections decide on rent extraction in period 2.

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- $\eta_i \sim N(1, \sigma_\eta^2)$ ability of the incumbent in jurisdiction i
- $\varepsilon \sim N(0, \sigma_\varepsilon^2)$ economic environment of the federation
- $\bar{\tau}$ exogenous tax rate
- r_i rent extracted by the incumbent of jurisdiction i, with $\bar{\tau} > \bar{r} \geq r_i \geq 0$
- η_1, η_2, and ε are independent from each other and unknown to both voters and incumbents.

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- transfer to jurisdiction i

$$z_i = t\left[\frac{(\tau_1 + \Gamma_1) + (\tau_2 + \Gamma_2)}{2} - (\tau_i + \Gamma_i)\right]$$

- $z_1 + z_2 = 0$ budget balances
- t equalization rate, with $0 \leq t \leq 1$
- $g_i = \tau_i + z_i$ public good supply in period 1 in jurisdiction $i = 1, 2$

- mistake in the assessment of fiscal capacities $i = 1, 2$

$$\Gamma_i = (\bar{\tau}_i - r_i)\gamma_i$$

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Payoff to citizens in jurisdiction $i = 1, 2$

$$u_i = 1 - \bar{\tau} + \alpha g_i + \delta \left(1 - \bar{\tau} + \alpha g_i^2\right) \quad \text{with } \alpha > 1$$

- δ discount factor

- g_i^2 public good supply in period 2 in jurisdiction $i = 1, 2$

Payoff to the incumbent of jurisdiction $i = 1, 2$

$$r_i + p_{I,i} \cdot \delta(R + r_i^2)$$

- $p_{I,i}$ probability of re-election
- R benefit from gaining office
- r_i^2 rent diverted in period 2, with $\bar{\tau} > \bar{r} \geq r_i^2 \geq 0$
- If elected, the challenger's payoff is r_i^2 .

Second period and the election

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- Fiscal capacity, equalization and public goods are determined as in period 1.

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- Voters in jurisdiction i re-elect the incumbent if their estimate $\tilde{\eta}_i$ of the incumbent's ability is at least as large as the expected ability of the challenger, $\tilde{\eta}_i \geq 1$.

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- In an equilibrium, the rents chosen by the incumbents coincide with the rents assumed by the citizens, $\tilde{r}_1 = r_1$ and $\tilde{r}_2 = r_2$.

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- The citizens' estimate $\tilde{\eta}_1$ of the incumbent's ability is normally distributed with mean $\mu(r_1, r_2, t)$ and variance $\sigma^2(r_1, r_2, t)$.

- With $F(\cdot, \mu, \sigma^2)$ for the c.d.f. of the (μ, σ^2)-normal distribution, the re-election probability is

$$p_{I,i} = \text{Prob}\{\tilde{\eta}_i \geq 1\} = 1 - F\left(1; \mu_i(r_1, r_2, t), \sigma_i^2(r_1, r_2, t)\right).$$

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- Decision problem and first-order condition

$$\max_{r_i} \qquad r_i + \left[1 - F\left(1; \mu_i(r_1, r_2, t), \sigma_i^2(r_1, r_2, t)\right)\right] \cdot \delta(R + \bar{r})$$

$$\text{FOC:} \qquad 1 + \frac{\partial\left[1 - F\left(1; \mu_i(r_1, r_2, t), \sigma_i^2(r_1, r_2, t)\right)\right]}{\partial r_i} \cdot \delta(R + \bar{r}) = 0.$$

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In a symmetric equilibrium with $r_i = \tilde{r}_i$ for $i = 1, 2$ in period 1 both incumbents take the rent

$$r = \bar{\tau} - \left(\frac{\sigma_\eta^2 + \sigma_\varepsilon^2 + [t/2(1-t)]^2 \sigma_\gamma^2}{(\sigma_\eta^2 + 2\sigma_\varepsilon^2) \cdot (\sigma_\eta^2 + 4[t/2(1-t)]^2 \sigma_\gamma^2) \cdot 2\pi} \right)^{1/2} \cdot \delta(R + \bar{r}).$$

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Proposition 1. *Starting from a positive equalization rate $t > 0$, a marginal increase in the equalization rate increases rents taken by incumbents in a symmetric equilibrium:*

$$\frac{\partial r}{\partial t} > 0.$$

FOC in a symmetric equilibrium

$$1 = \left[-\frac{\partial \mu_i(r,r,t)}{\partial r_i}\right] \cdot f\big(1; \mu(r,r,t), \sigma^2(r,r,t)\big) \cdot \delta(R+\bar{r})$$

marginal benefit of rent diversion	=	impact of additional rent on mean estimate of incumbent's ability	$*$	loss in re-election probability per unit of change in μ	$*$	value of re-election

FOC in a symmetric equilibrium

$$1 = \left[-\frac{\partial \mu(r_j, r_i, t)}{\partial r_j}\right] \cdot f\big(1; \mu(r,r,t), \sigma^2(r,r,t)\big) \cdot \delta(R+\bar{r})$$

marginal benefit of rent diversion	=	impact of additional rent on mean estimate of incumbent's ability	* loss in re-election probability per unit of change in μ	* value of re-election
effects of equalization		$\downarrow$	$\uparrow$	
		Rent diversion is less likely to be interpreted as incompetence.	Observations in period 1 are less informative.	

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- From this effect, fiscal equalization is detrimental to citizens' welfare, but ...
  - ◇ ... equalization mitigates tax competition,
  - ◇ ... equalization provides insurance.
- A welfare analysis of fiscal equalization should trade off these benefits against the political cost treated in this paper.