

Empirical Economic Modeling

Public

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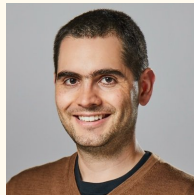
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Lecture plan

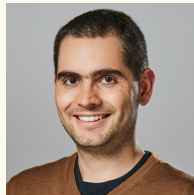
Central research questions in public: How to design tax systems?

1. How do various forms of taxation compare?
2. How does behavior impact taxation?

Guvenen, Fatih, Gueorgui Kambourov, Burhan Kuruscu, Sergio Ocampo and Daphne Chen (2023). Use It or Lose It: Efficiency and Redistributive Effects of Wealth Taxation. *Quarterly Journal of Economics* 138(2), 835-894.



Guvenen, Kambourov, Kuruscu, Ocampo and Chen (2023 QJE). Use It or Lose It



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Research question: How does wealth taxation compare to capital taxation?

Example: Fredo is bad at business, Michael is good. Government needs to raise \$5M

	Capital Income Tax		Wealth Tax	
	Fredo	Michael	Fredo	Michael
Rates of return	$r_F = 0\%$	$r_M = 20\%$	$r_F = 0\%$	$r_M = 20\%$
Wealth	100M	100M	100M	100M
Pre-tax income	0	20M	0	20M
Tax liability	0	$20\tau_k = 5M$	$100\tau_a = 2.5M$	$100\tau_a = 2.5M$
After-tax rate of return	0%	15%	-2.5%	17.5%
After-tax wealth ratio	$\frac{W_M}{W_F} = \frac{115}{100} = 1.15$		$\frac{W_M}{W_F} = \frac{117.5}{97.5} \approx 1.20$	

⇒ Under wealth taxation, you must use your wealth or you lose it

If Fredo would be as good as Michael, form of taxation would not matter!

↪ Taxing capital vs. wealth is the same with homogeneous rate of return

...but we have empirical evidence that r is heterogeneous

HANK

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Entrepreneurial productivity

Everyone is born with ability \bar{z}_i : $\log \bar{z}_i = \rho_z \log \bar{z}_i^{\text{parent}} + \varepsilon_{\bar{z}_i}$, $\varepsilon_{\bar{z}_i} \sim N(0, \sigma_{\bar{z}_i}^2)$

⇒ Some high-ability children will start with low wealth and vice versa

⇒ Capital misallocation!

Productivity evolves: at age h ,

$$z_{ih} = \begin{cases} \bar{z}_i^\lambda & \text{if high} \\ \bar{z}_i & \text{if low} \\ 0 & \text{if out} \end{cases} \quad \text{with } \Pi = \begin{bmatrix} 1 - p_1 - p_2 & p_1 & p_2 \\ 0 & 1 - p_2 & p_2 \\ 0 & 0 & 1 \end{bmatrix}$$

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Labor productivity

Everyone is born with ability κ_i : $\kappa_i = \rho_{\kappa} \kappa_i^{\text{parent}} + \varepsilon_{\kappa_i}$, $\varepsilon_{\kappa_i} \sim N(0, \sigma_{\kappa_i}^2)$

Productivity evolves: at age h ,

$$\log w_{ih} = \kappa_i + g(h) + e_{ih}, \quad e_{ih} \sim AR(1)$$

⇒ Aggregate labor supply:

$$L = \int w_{i,h(i)} \ell_{i,h(i)} di$$

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Production

Entrepreneurs produce intermediate good $x_{ih} = z_{ih}k_{ih}$

Final good is produced by combining intermediate inputs and labor:

$$Y = Q^\alpha L^{1-\alpha} = \left(\int x_{i,h(i)}^\mu di \right)^{\frac{\alpha}{\mu}} L^{1-\alpha}$$

Consumption, labor, bequests

Individuals maximize expected lifetime utility:

$$\max \mathbb{E} \left[\sum_{h=1}^H \beta^{h-1} (\phi_h u(c_h, 1 - \ell_h) + (1 - \phi_h) v(b)) \right]$$

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Financial markets

Assets a_{ih} can be borrowed subject to some borrowing constraint

Government

Capital taxation: taxes on capital income, labor, consumption, bequests

Wealth taxation: taxes on assets, labor, consumption, bequests

(Also pensions)

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Empirics

Calibrate model on benchmark US economy with capital taxation

Compare aggregates under counterfactual wealth taxation

	Tax Reforms: Change from US Benchmark									
	Quantities (% Change)						Prices (Change)			
	K	Q	TFP _Q	L	Y	C	\bar{w}	\bar{w} (net)	Δr^\dagger	Δr^\dagger (net)
RN reform	16.4	22.6	5.3	1.2	9.2	9.5	8.0	8.0	0.21	-0.36
BB reform	9.2	16.0	6.2	1.2	6.9	7.7	5.6	5.6	0.67	-0.38

Notes: RN and BB refer to the revenue-neutral and balanced-budget reforms, respectively. Percentage changes are computed with respect to the benchmark economy, which has $\tau_k = 25\%$ and $\tau_a = 0\%$. \dagger Changes in the interest rate are reported in percentage points. The net wage is defined as $(1 - \tau_\ell)w$, and the net interest rate is defined as $(1 - \tau_k)r$ or $r - \tau_a$, depending on the model. The TFP variable is measured in the intermediate goods market.

RN vs. BB: due to pensions

Lots more in paper: welfare, optimal taxation, progressive taxes, transition path, ...