Capital Gains and Wealth Taxation

Distributional Effects, Who Gains and Who Loses

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Introduction

Who gains, and Who loses switching from capital gains to wealth taxation?

Some Motivation

- Governments tax all kind of goods
- Aim to redistribute revenues to increase everyone's welfare
- Efficient taxation
- Need of policy reforms
- Evidence of persistent Heterogeneity in r_t in the cross section and life cycle.

Literature Review

- Original Idea comes from [Guvenen et al., 2019]
- OLG with entrepeneurial motivation
- Heterogeneity in (r_t)
- Balanced government budget

Combines many ingredients, so as it lais on other literature's

- Optimal Dynamic Taxation [Golosov et al., 2006]
- Wealth Concentration saving drivers [De Nardi et al., 2016]
- Entrepreneurship [Quadrini, 2000]

Prelude

Assume there are two possible returns r_t^s, and one agent is a systematically more successful investor than the other,

- Capital gains tax τ_r charges (relatively) more to the productive person.
- Wealth taxation τ_a shifts burden from **productive flows** (a'), to Unproductive stocks (a)

Similarity:

- Don't tax young Start-Ups CEO's flows,
- Tax the stock of Bill Gates, who once was extremely productive
- Life-Cycle considerations: shifting the burden from productive to unproductive a might be interpreted as smoothing taxation over Firms's Life-Cycle.

The Model: Agents' Problem

- Discrete Time Life Cycle Economy with incomplete markets populated by two agents
- Uncertainty on r_t, that follows a discrete Markov Process with transition probabilities $\Gamma^{(i)}$
- Households solve

$$\max_{\{c,a'\}_{t=0}^{T}} \mathbb{E}_0 \Big\{ \sum_{t=0}^{T} \beta^t u(c) \Big\}$$

- Subject to flow constraint, borrowing limit and transversality condition

$$a' = (1+r)(a+y-c) \tag{1}$$
$$a' \geq -\underline{a} \tag{2}$$
$$a'_{T+1} = 0 \tag{3}$$

- For now, forget about uncertainty notation, taxes and agents subscripts (i)

Model: Income Profile

- y is a Life cycle income profile that generates a roughly 90% increase from $t = 0$ to the peak at $t = 35$. After retirement, there is a constant pension benefit (b) equal to 50% of the last wage earned

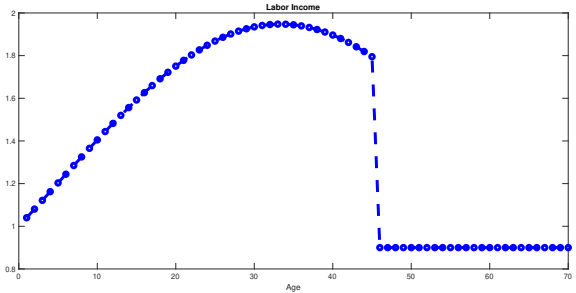


Figure: Life Cycle Income profile. Same for both agents, no uncertainty.

Model: Recursive Formulation

- Dynamic Programming Approach,
- Bellman Equation ($V_t(\cdot)$) in terms of a' (the state)

$$V(a,r) = \max_{a' \in [\underline{a}, (y+a)(1+r)]} \left\{ u\left(a + y - \frac{a'}{1+r}\right) + \beta \mathbb{E}\left[V(a',r')\middle|r\right] \right\}$$

- Solved using Backward Iteration (Matlab code from class)
- From the transversality condition $a'_{71} = 0$ to $t = 0$
- Recall r is a Markov Chain

Model: Taxation I

- One Euler Eq for each tax schedule,
- EE for Capital Gains tax τ_r (baseline)

$$u'\Big(y + a - \frac{a'}{1 + r(1-\tau_r)}\Big) = \beta(1 + r(1-\tau_r))\mathbb{E}_t\Big[u'\Big(y' + a' - \frac{a''}{1 + r'(1-\tau_r)}\Big)\Big]$$

- EE for Wealth tax τ_a

$$u'\Big(y + a(1-\tau_a) - \frac{a'}{1 + r}\Big) = \beta(1 + r)\mathbb{E}_t\Big[u'\Big(y' + a'(1-\tau_a) - \frac{a''}{1 + r'}\Big)\Big]$$

Model: Taxation II

- In absence of transfers taxation reduces welfare (unsurprisingly)
- Tax effects on the flow constraints (simplest case)

$$\tau_r \ : \ a' = (1 + r(1 - \tau_r))(a + y - c)$$
$$\tau_a \ : \ a' = (1 + r)(a(1 - \tau_a) + y - c)$$

- Partial effects of taxation today with respect wealth saved for tomorrow?

$$\tau_r \ : \ \frac{\partial a'}{\partial \tau_r} = -r(a + y - c)$$
$$\tau_a \ : \ \frac{\partial a'}{\partial \tau_a} = -a(1 + r)$$

- Who is (relatively) more affected each case? The one who saves, and the one who owns. Up to what extent?

Calibration I

- Two targets
  1. Significant fraction of people with zero wealth (life cycle perspective)
  2. Certain degree of right skewness on the cross section distribution of a
- Parameters from the literature or class γ, $\underline{a}$, T, β, ϕ_1, ϕ_2...
- Model calibrated $r_t^j(s)$, and transition probabilities,

$$\mathsf{r}^{(1)} = \begin{pmatrix} 0.15 & 0.05 \end{pmatrix} \qquad \mathsf{r}^{(2)} = \begin{pmatrix} 0.1 & 0.01 \end{pmatrix} \tag{4}$$

- Whose transition probabilities are

$$\Gamma^{(1)} = \begin{pmatrix} 0.8 & 0.2 \\ 0.5 & 0.5 \end{pmatrix} \qquad \Gamma^{(2)} = \begin{pmatrix} 0.3 & 0.7 \\ 0.2 & 0.8 \end{pmatrix} \tag{5}$$

Calibration II

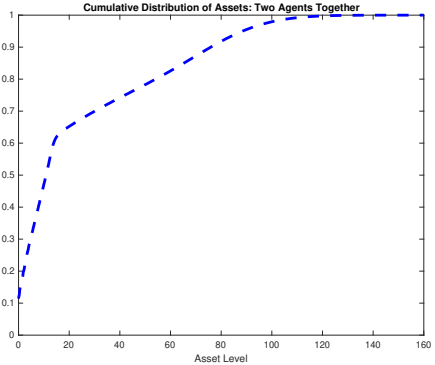
- CES utility function $u(c) = \frac{c^{1-\gamma}}{1-\gamma}$

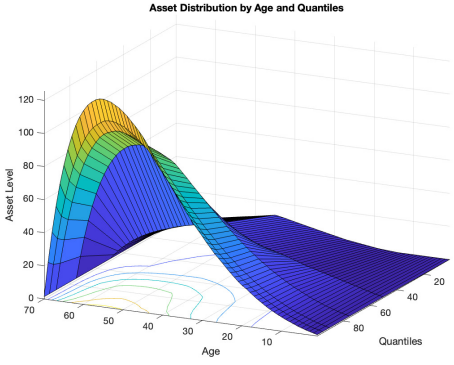
Table: Baseline Calibration

$\beta = 0.98$	$T = 70$
$\gamma = 2$	Retirement Age $= 45$
$\tau_r = 25$	Retirement Benefit $= 50\%$ last wage
$\underline{a} = 0$	

Baseline Results (τ_r)

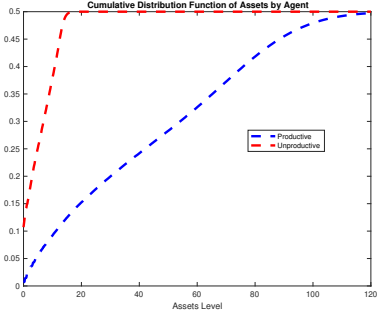
- Life Cycle (joint) wealth distribution. How does it extrapolate to the cross section?
- Asset Holdings by age and wealth profile.





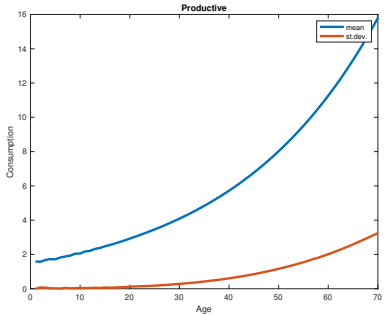
Baseline Results (τ_r)

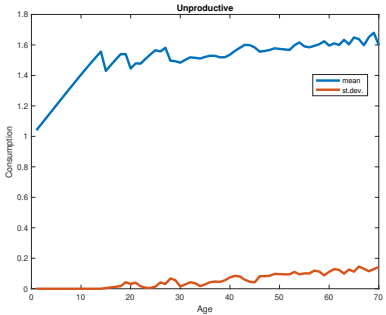
- Wealth Distribution for each agent
- Share of agents by asset level. For any asset, what is the probability of finding a productive guy?
- Idea: use the pdf $f_i(a) = \int_{\underline{a}}^{\bar{a}} F_i(a)da$, and compute $share_i(a) = \frac{f_i(a)}{\sum_{j \in I} f_j(a)}$



Baseline Results (τ_r)

- Non-Stationary moments for the productive agent
- Constant increase in mean for unproductive until $t = 10$ and borrowing limit $\underline{a}$



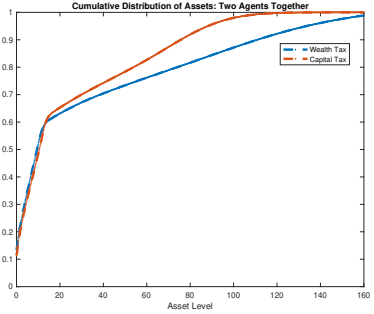


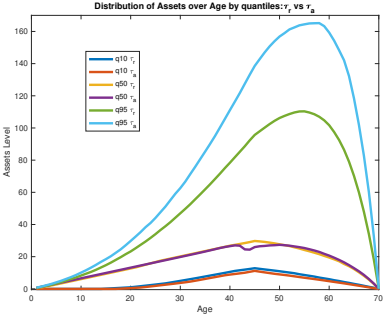
Wealth Taxation (τ_a)

- Replace $\tau_r = 25\%$ with $\tau_a = 1.5\%$, similar revenue according to [Guvenen et al., 2019]
- Now pays who has
- Expect the burden to shift from unproductive stock o wealth to productive flow of wealth
- Return of investments fully deductibles from taxation
- Unchanged transfers transfers G
- No Tax Enforcement problems

Wealth Taxation (τ_a)

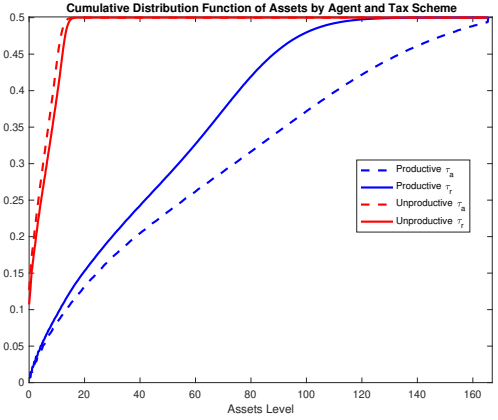
- Unproductive Agent worse off
- Productive Agent better off





Wealth Taxation (τ_a)

- Higher prob at zero assets
- Unproductive slightly worse off
- Productive significantly better off

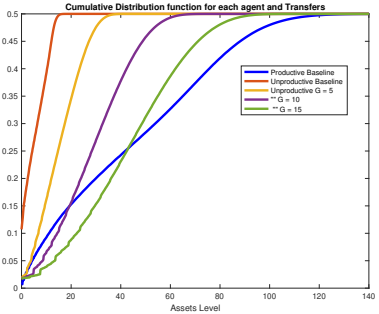


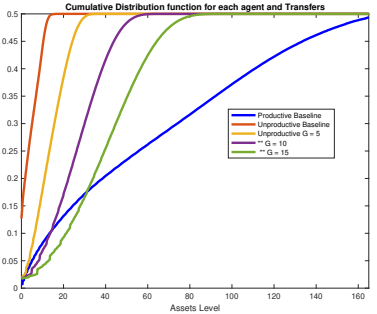
Government's Role

- Neglected government's actions up to here
- Same transfers with changing revenue $\rightarrow$ improvable taxation
- Transfers may help everyone to be better off

Goverment's Role

- Poor periods are easy to mitigate





Discussion

- Many r_t's...
- Cross Sectional differences: the wealthy do not necessarily coincide with the productive
- General Eq with optimal taxation
- Savings increases production via capital, not just precautionary saving

Conclusions

- Capital Gains tax hurts savers
- Adverse effect on wealth accumulation (capital creation)
- Wealth taxation burdens the unproductive person
- Effective Redistribution may make everyone better off

HOPE YOU HAVE ENJOYED

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