Discussion of: Krueger, Ludwig (2018)

BFI's Taxation and Fiscal Policy Conference

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One Page Summary

- Provides **sharp characterization** of optimal linear tax on capital
- Environment of interest: overlapping generations
- Why this environment?
  1. Lifecycle component: Income risk ➜ taxes
  2. Multiple generations: Relative Pareto weights ➜ taxes
  3. Log utility + Other: Simplify solution of Ramsey problem (✂ Income risk)
- **Next:** Review formulas; To the data; Review of assumptions

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A Simpler Example

Changing Alpha: Theory (I/II)

- Consider 3 periods and 2 generations
- Let capital share $\alpha_0 \to \alpha_1 \to \alpha_2$
- Maintain log utility and Cobb-Douglas production.

[1] Generalized in Section 6 of the paper for general risk aversion and IES.

Changing Alpha: Theory (I/II)

- Consider 3 periods and 2 generations
- Let capital share $\alpha_0 \to \alpha_1 \to \alpha_2$
- Maintain log utility and Cobb-Douglas production.Then ($\approx$ **Proposition 1**):[1]

$$s_0 = \frac{1}{1 + [\alpha_1 \beta (1 - \tau_1) \Gamma]^{-1}}$$

$$\text{Income Risk} \quad \Gamma = \int [\kappa \eta_1 (1 - \alpha_1) + \alpha_1]^{-1} \, d\Psi(\eta_1)$$

- Observations:
  1. **Proof:** Euler equation ✚ Express consumption in terms of k_{t+1}
  2. As α_1 increases income dispersion matters less

[1] Generalized in Section 6 of the paper for general risk aversion and IES.

Changing Alpha: Theory (II/II)

- Let ω_0, ω_1 weights on first and second generation ($\theta = \omega_1/\omega_0$)
- Assume planner can choose saving rate s only.

Changing Alpha: Theory (II/II)

- Let ω_0, ω_1 weights on first and second generation ($\theta = \omega_1/\omega_0$)
- Assume planner can choose saving rate s only.Then ($\approx$ **Proposition 2**):

$$s_0^* = \frac{1}{1 + \left[\alpha_1\beta + \frac{\omega_1}{\omega_0}\alpha_1(1+\alpha_2\beta)\right]^{-1}}; \qquad s_1^* = \frac{1}{1 + [\alpha_2\beta]^{-1}}$$

$$\text{Can implement rate with } \text{☞} \quad (1-\tau) = \frac{1}{\Gamma}\left[1 + \frac{\theta}{\beta}(1+\alpha_2\beta)\right]$$

- Observations:
  1. s_i^* independent of Γ
  2. s_i^* determined by impact on current and future generation

Back to the main model...

Data

- Uses Social Security 2006 (public use) earning-master-file
- Restrict to males ages 20 and above with birth-year $>=$ 1910
- Split in two groups by age: Young $\in [20, 50)$ and Old $\in [50, \infty)$
- If required, restrict to individuals with at least 30 years data centered at age 50 (Ending up with 108,522 individuals)
- Other parameters: $\beta = 0.4 = 0.97^{30}$ (0.8 in paper); $\alpha = 0.2$, $\kappa = 0.5$.

➜ Warning: data is W-2 based and top-coded at SS taxable maximum

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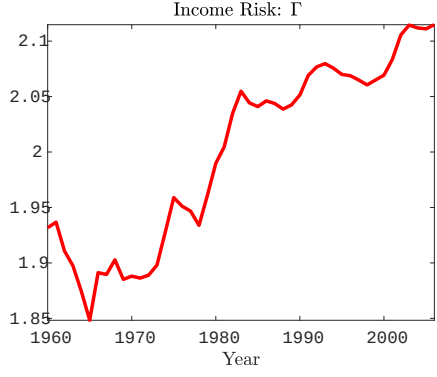
Main Model: Gamma

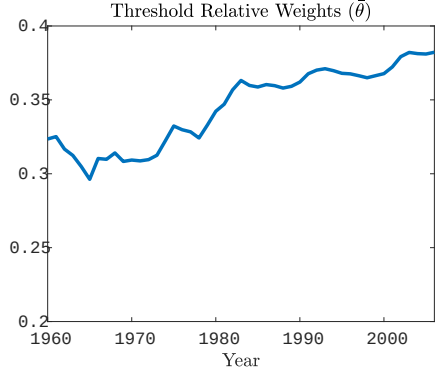
Recall ☞ $\Gamma = \int [\kappa\eta(1-\alpha)+\alpha]^{-1}\, d\Psi(\eta) > 1$



- Potential concern: model assumes stationary Γ

Main Model: Threshold θ

- **Proposition 3** characterizes threshold values for societal discount factor. If θ is above the threshold ➜ capital is subsidized



☞ In the next slides let's set $\theta = 1/3$

Main Model: Saving Rate

In Paper ☞ $\quad s = \dfrac{1}{1 + [\alpha\beta\Gamma]^{-1}} \qquad s^* = \dfrac{1}{1 + \left[\alpha\beta + \frac{\theta}{1-\alpha\theta}\alpha(1+\alpha\beta)\right]^{-1}};$

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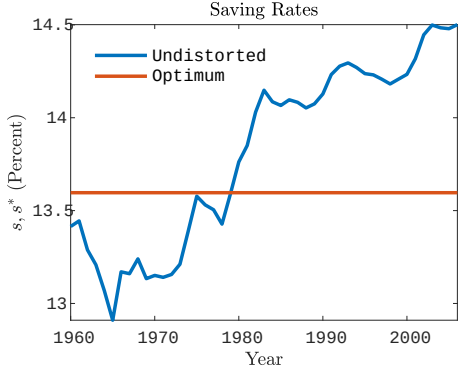

- Higher income-risk increases (the model) saving rate over time

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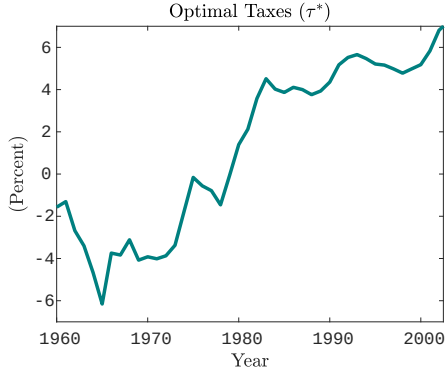
Main Model: Taxes

In Paper ☞ $(1-\tau^*) = \frac{1}{\Gamma}\left(1 + \frac{\theta}{\beta}\frac{1+\alpha\beta}{1-\alpha\theta}\right)$



- As anticipated: subsidies end in 80s due to increase in income risk

Room-Based Lit Review (Incomplete)

- **Farhi, Sleet, Werning, Yeltekin (2012):**
  - ➜ What about commitment?
- **Golosov, Troshkin, Tsyvinski (2016):**
  - ➜ What about consumption-labor distortions?
- **Stantcheva (2017):**
  - ➜ What about human capital?

~~Discussion of~~ Ideas for: Krueger, Ludwig (~~2018~~ 2020)

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Some Key Assumptions

- In which direction to write the next paper?
- Paper already considers Epstein-Zin preferences
- For ideas, let's look at some data relative to:
  1. Income Process
  2. The Saving Rate
  3. Feasibility

The Income Process

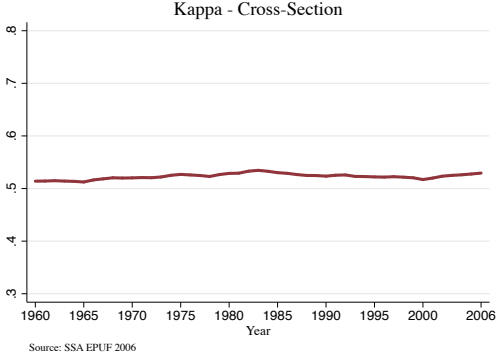
In the paper:

- Income when young: $i_y(t) = (1-\kappa)w_t$
- Income when old: $i_o(t) = \kappa\eta_{t+1}w_{t+1}$
- η_t: i.i.d. and mean one; w_t common wage component
- Derive κ averaging in the cross-section or panel:

$$\frac{E^c[i_y(t+1)]}{E^c[i_o(t)]} = \frac{1-\kappa}{\kappa}$$

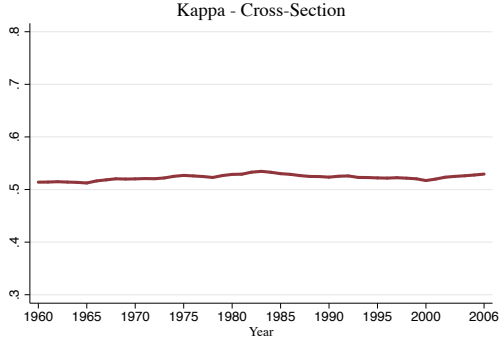
$$E^p\left[\frac{i_o(t)}{i_y(t)}\right] \cdot \frac{E^c[i_y(t)]}{E^c[i_y(t+1)]} = \frac{\kappa}{1-\kappa}$$

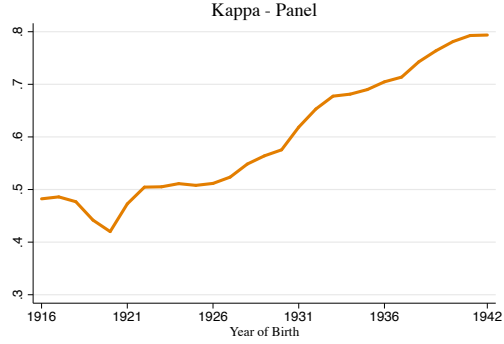
The Income Process: Age Timing



Source: SSA EPUF 2006

The Income Process: Age Timing





- Constant over time, some issue with panel approach (heterogeneity? prices?)
- Caveat: **Guvenen, Karahan, Ozkan, Song (2016)**
  For ages 25-55, heterogeneity at top of income distribution

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The Income Process: Uncertainty

- **Key:** when do households face most uncertainty?

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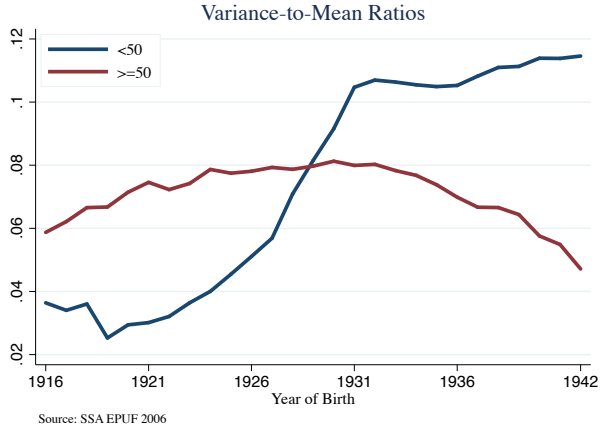

Source: SSA EPUF 2006

- Consistent with **Huggett, Ventura, Yaron (2011)**

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The Saving Rate

- In the paper, young save. Key driver is precautionary saving
- Use *Survey of Consumer Finances* for 2016
- Split in two groups by age: Young $\in [24, 54)$ and Old $\in [54, 84)$
- With minor fudging:

$$s_{\text{young}} = 5.5\% \qquad s_{\text{old}} = 0.0\%$$

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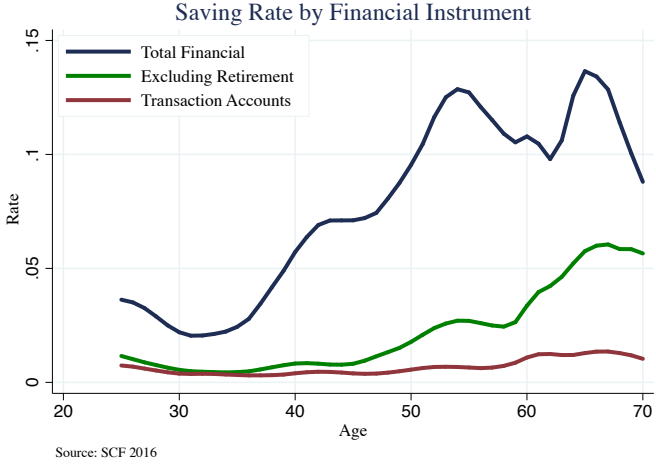
The Saving Rate: Smoothed Age Patterns



- **Retirement** = Quasi-liquid retirement accounts + Other managed assets + Other financial assets

Feasibility

- ☞ k_{t+1} determined entirely by domestic savings. What do we observe:

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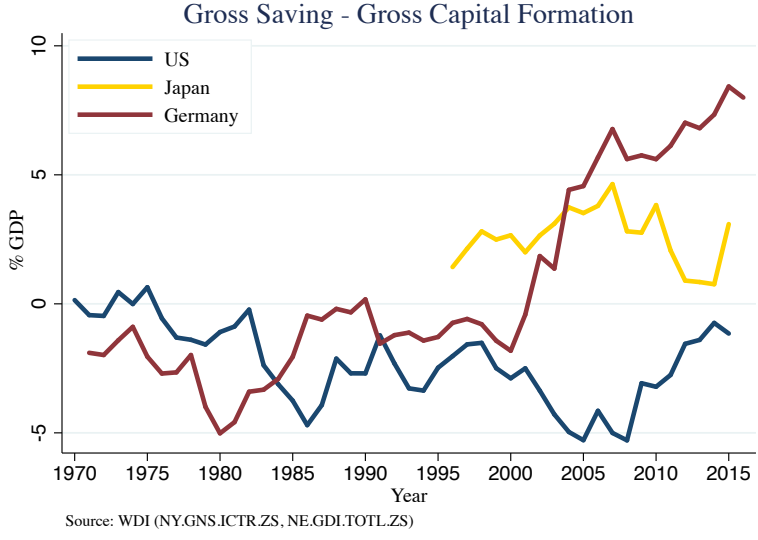

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Conclusion

S: Clean and sharp characterization of policy and tradeoffs

W: Sharpness comes at a cost: appeal of the assumptions
(lifetime timing saving & uncertainty; non-stationarity; commitment)

O: Ability to apply analysis to other margins: tech-change; aging population

T: A crowded landscape, need a loud voice

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