Wealth distribution in life-cycle economies Huggett(1996)

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Outline

Motivation

- The distribution of wealth has been discussed in many years.
- Need to investigate walth distribution quantitatively.
- The basic OLG model has a lot of problems about the wealth distribution.
- This paper overcomes these problems.

Innovation

- Huggett modified the basic OLG model in the following points.
  1. Agent's lifetime is uncertain.
  2. Individual's earnings is also uncertain.
  3. There is not any market to insure these uncertainty.
- Therefore, there will be accidental bequests and precautionary saving.
- This model can consider heterogeneity within an age group.

Data

capital output ratio	Transfer wealth ratio	Gini
3.0	0.78-1.32	0.72

Table: wealth in US

Percentage wealth in the top					
1%	5%	20%	40%	60%	80%
28	49	75	89	96	99

Table: wealth distribution in US

Household 1

- live a maximum of N periods and face survival probability s_t
- All age 1 agents have the same preference.

$$E\left[\sum_{t=1}^{N}\beta^t\left(\prod_{j=1}^{t}s_j\right)\frac{c_t^{1-\sigma}}{1-\sigma}\right]$$

- poputation grows at rate n. demographic dist is stationary.
- labor supply is exogenous. a labor endowment is given by e(z,t).
- Agents face idiosyncratic labor productivity shock, z.

Household 2

- Bellman equation can be written as follows.

$$V(a,z,j) = \max_{c,a'} \left[u(c) + \beta s_{t+1} E \left\{ V(a',z',t+1) \right\} \right]$$

subject to

$$c + a' \leq a(1 + r(1-\tau)) + (1-\theta-\tau) we(z,t) + T + b_t$$

$$c \geq 0$$

$$a' = \begin{cases} \underline{a} & (t < N) \\ 0 & (t = N) \end{cases}$$

Firm and Government

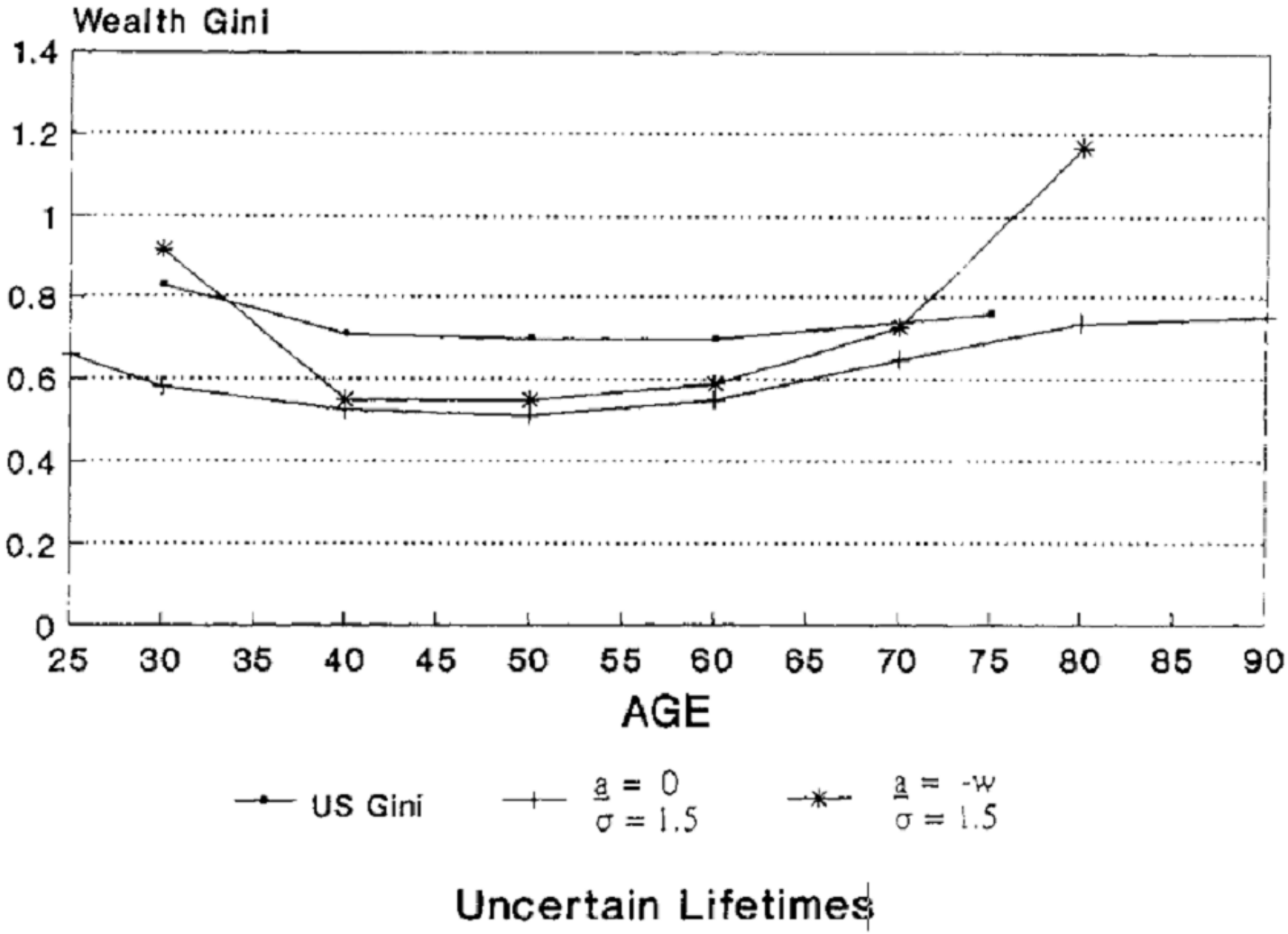
- Firm has a CRS production function $Y = AK^{\alpha}L^{1-\alpha}$
- capital depreciates at rate δ every period.
- Government runs the PAYG social security system and receives tax.
- Government receives the accidental bequests and distributes it.

Wealth distribution

Table 3
Wealth distribution (risk aversion coefficient $\sigma = 1.5$)

Credit limit $\underline{a}$	Earnings shock σ_ε^2	K/Y	Transfer wealth ratio	Wealth Gini	Percentage wealth in the top 1%	5%	20%	Zero or negative wealth (%)
US economy		3.0	0.78–1.32	0.72	28	49	75	5.8–15.0
Certain lifetimes								
0.0	0.00	2.9	0.0	0.47	2.4	11.6	42.8	14.0
$-w$	0.00	2.8	0.0	0.54	2.7	12.7	46.6	25.0
0.0	0.045	3.2	0.0	0.70	10.8	32.4	68.9	19.0
$-w$	0.045	3.1	0.0	0.74	11.1	33.8	72.3	24.0
Uncertain lifetimes								
0.0	0.00	3.1	1.03	0.46	2.5	11.7	42.8	11.0
$-w$	0.00	3.0	1.07	0.49	2.6	12.1	44.3	12.0
0.0	0.045	3.4	0.84	0.69	10.9	32.9	70.0	17.0
$-w$	0.045	3.2	0.89	0.76	11.8	35.6	75.5	24.0

Gini coefficients within age groups



Conclution

- This modified OLG model can replicate the measure of the aggregate wealth and transfer wealth in the US.
- It can also replicate the US wealth Gini.
- However, it fails to generate wealth concentration in the upper tail of the distribution.(e.g. top 1 %)
- Wealth inequality within age groups in the model cannot explain all of it.

Extension

- To replicate wealth concentration, we need to consider entrepreneurship.(Quadrini, 1999)
- More heterogeneity within age groups.
- Borrowing constraint may be loose.