Wealth Accumulation in the U.S.: Do Inheritances and Bequests Play a Significant Role?

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Goal of this paper

A model which nests life-cycle and dynastic savings to evaluate importance of each saving motive and implications for policy analysis

- Standard approach: life-cycle model and dynastic model $\Rightarrow$ savings motive differ $\Rightarrow$ strongly contrasting policy implications

Main results:

1. Life-cycle savings account for 2/3 of economy's wealth (Kotlikoff and Summers, 1981: 20%, Modigliani, 1986: 80%)
2. Model suggests little long-run effect on interest rate from public policy
3. Generate a more concentrated wealth distribution than OLG (e.g. Huggett 1996)

Setting

OLG with finite live and intergenerational altruism:

- Discrete time
- Continuum of households
- Parent is age 22 when household begins, and 26 when child is born
- When parent is 48 the child leaves home to form its own household and the parent works until age 64
- No one lives beyond the age of 90
- Mortality sets in after the age of 48 with the fraction q_s of adults remaining alive at age s

- Heterogeneity in earnings ability (Solon, 1992): if z' is the ability of the son of a father with ability z, then

$$\log(z') = \zeta \log(z) + \mu + \eta$$

- An adult of age s and ability z who was born at time t supplies $e_s z g^{t+s}$ effective labor units
- e_s is the product of experiential human capital and labor hours
- Labour hours are inelastic and earning ability z is constant throughout life
- g is the gross annual rate of labor-augmenting technological progress
- No borrowing
- Markets supply actuarially fair life insurance and annuities

Preferences

- For the young household define utility from own lifetime consumption at age 22

$$
\begin{aligned}
U^y(a_{22}, a_{48}, z, t) = \max_{c_s} \sum_{s=22}^{47} \beta^{s-22} q_s u(c_s) \\
a_{s+1} = & R_{s-1} a_s + e_s z g^{t+s} W(1-\tau-\tau_{ss}) - c_s, \\
a_s \geq 0 \quad \forall s = 22, \cdots, 48
\end{aligned}
$$

- Similarly, for the old household at age 48

$$
\begin{aligned}
U^o(a_{48}, z, t) = \max_{c_s} \sum_{s=48}^{88} \beta^{s-48} q_s u(c_s) \\
a_{s+1} = R_{s-1} a_s + e_s z g^{t+s} W(1-\tau-\tau_{ss}) + ssb(s, z, t)(1-\tau/2) - c_s \\
a_s \geq 0 \quad \forall s = 48, \cdots, 89
\end{aligned}
$$

Bellman Equations

- Let $V^y(a_{22}, z, t)$ be the total utility of a 22-year old household
- Let $V^o(a_{48}, z, z', t)$ be the total utility of a 48-year old household (z' child's earning ability)
- Let $\xi > 0$ be the intergenerational subjective discount factor
- We obtain the following two Bellman equations:

$$V^y(a_{22}, z, t) = \max_{a_{48} \geq 0} \left\{ U^y(a_{22}, a_{48}, z, t) + \beta^{26} E_{z'|z} \left[V^o(a_{48}, z, z', t) \right] \right\}$$

$$V^o(a_{48}, z, z', t) = \max_{b_{48} \geq 0} \left\{ U^o(a_{48} - b_{48}, z, t) + \xi V^y(T(b_{48}, t, z'), z', t + 26) \right\}$$

- The intergenerational transfer is b_{48}, and $T(b_{48}, t, z')$ is the net-of-transfer-tax inheritance of the child
- Nature draws z', parent chooses transfers at age 48, child chooses wealth a_{48} at age 22

Existence of Equilibrium

A steady-state equilibrium only exists for $r \in [0, r^*)$

- Suppose maximization yields $\psi(a_{22}, z, z')$ as the optimal (gross of tax) transfer
- Then the initial wealth in the dynasty's next generation is given by

$$a'_{22} = T(\psi(a_{22}, z, z'), z')$$

- This, together with the stochastic process of earnings ability, determines a Markov process from points (a_{22}, z) to (a'_{22}, z')
- As in Laitner (1992), we have an invariant set $\mathcal{A} \times \mathcal{Z}$ for the Markov process
- Furthermore, there is a unique stationary distribution for the process in this set
- Thus we can compute supply of wealth which varies continuously in r and has a horizontal asymptote at $r = r^*$

$\Rightarrow$ must have an intersection of the demand and the supply curves

Timing of Intergenerational Transfers

- Dynamic programming determines a dynasty's desired transfer, say, $b_{48} = \psi(a_{22}, t, z, z')$
- Timing is indeterminate if liquidity constraints do not bind
- Binding liquidity constraints $\Rightarrow$ transfers must be made promptly
- Make timing assumption for computation to resolve indeterminacy

- Argues that parents strongly prefer to make their intergenerational transfers late in life
- In order to break timing indeterminacy use rule:
  1. Inter vivos transfers flow only when liquidity constraints bind on children
  2. Once parent has transferred enough to just lift child's constraint, parent saves remaining transfer for bequest
  3. If parent remains alive at age 74 make final transfer

Just briefly...

- 1995 Survey of Consumer Finances
- Hardest parameters to calibrate: γ and ξ (cannot be treated in isolation)
- For a selection of γ's iterate on ξ until supply and demand for financing balance; higher $\xi \Rightarrow$ supply curve to shift to the right
- When γ is low, IES is low, and risk aversion is high$\Rightarrow$ household builds dynastic wealth to insure progeny against bad earnings realizations
- Different (γ, ξ) combinations will lead to different equilibrium distributions of intergenerational transfer
- With γ low (high risk-aversion), a relatively small ξ is required, to match empirical wealth
- With γ high (low risk-aversion), a relatively high ξ is required, to match empirical wealth

Results

How well does the simulated distribution of wealth match U.S. data?

- The simulated distribution of wealth with $(\gamma, \xi) = (0.7, 0.82)$ performs best to match the empirical wealth distribution
- The Gini coefficient for the data is 0.73 and 0.75 for the simulation
- The shares of wealth held by the top 1,5, and 10% in the data are 27.7,47.5, and 60 and in the model 25,43.4, and 56
- A weakness of the best simulation is its inability to account for the net worth of the bottom 50%: the actual share is 6.3% but only 0.08% in the simulation

Supply elasticities

- The interest elasticity of the supply of financing at the steady-state equilibrium can be crucially important for public policy
- The supply elasticities vary greatly for different values of γ
- For $\gamma = -2$ the supply elasticity is 0.8, for $\gamma = 0$ it is 3.4, and for $\gamma = 0.7$ it is 18
- This leads to the prediction that changes in social security policy and national debt will tend not to affect the U.S. steady-state interest rate very much

Share of Life-Cycle Wealth Accumulation

- Kotlikoff and Summers (1981) argued that life-cycle saving might account for as little as 20% of total U.S. net worth
- Modigliani (1988) subsequently suggested a figure of 80%
- We can simulate our model with $\xi = 0$ so that intergenerational transfers are eliminated
- Steady-state private net worth as a fraction of empirical net worth then provides a measure of relative importance of life cycle-saving
- Life-cycle saving alone explains two-thirds of private net worth
- Thus, dynastic behavior's effect on the supply elasticity seems much more dramatic than its contribution to total wealth accumulation