

Life-Cycle Labor Supply Model: Calibration Check

May 17, 2024

Outline

- ① Summary of Environment
- ② Benchmark Calibration

Individual's Recursive Problem

$$V_j(k; a) = \max_{c, k', n} u(c, n) + \beta V_{j+1}(k'; a)$$
$$s.t. \quad (1 + \tau_c)c + k' = Rk + \tau_0(wh_j(a)n)^{1-\tau_1} + T$$

Notation

- a is ability
- k is stock of assets
- c is consumption
- n is labor (hours)
- $h_j(a)$ is human capital of type a at age j (full $h_j(a)$ known ex-ante)
- $V_j(k; a)$ is value of being in state $(j, k; a)$
 - ▶ retirement: for $j \geq J_r$, $n = 0$
 - ▶ final period: require $k' \geq 0$

Functional Forms

- **Preferences:** $u(c, n) = \frac{c^{1-\sigma}-1}{1-\sigma} - \psi \cdot \pi \frac{(n)^{1+1/\gamma}}{1+1/\gamma}$
- **Initial conditions:** (fill in)
- **Measurement error:** classical in hours $h = n + i$ and earnings e
 - ▶ $\tilde{n} = \exp(\epsilon_n) \cdot n, \epsilon_n \sim N(0, \sigma_{mn})$
 - ▶ $\tilde{e} = \exp(\epsilon_e) \cdot e, \epsilon_e \sim N(0, \sigma_{me})$
- **Shock processes:** (fill in)

Outline

- ① Summary of Environment
- ② Benchmark Calibration

Calibration: Exogenously-Set Parameters

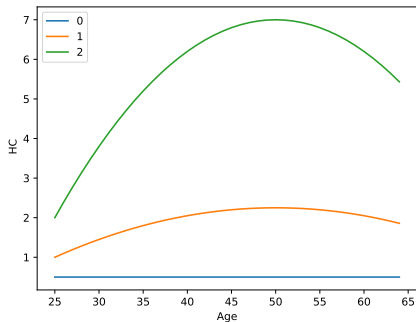
Parameter	Interpretation	Value	Source
R	Gross interest rate	1.02	Benchmark
β	Patience	0.9804	$1/\beta$
σ	CRRA	1.0	Benchmark
γ	Frisch elasticity	0.3	Benchmark

Calibration: Endogenously-Set Parameters

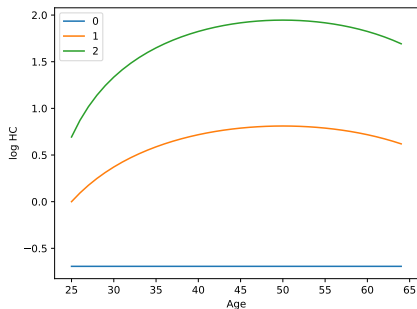
(fill in)

Human Capital

Level

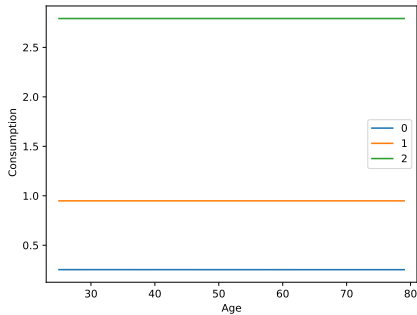


log

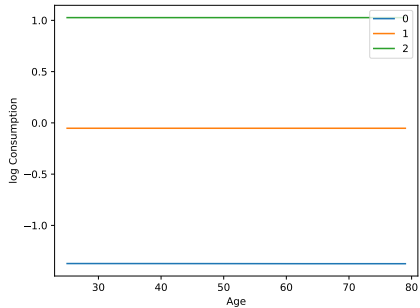


Consumption

Level

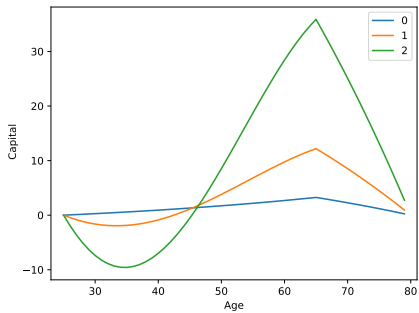


log

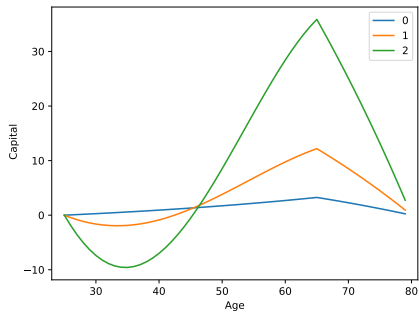


Assets

Level

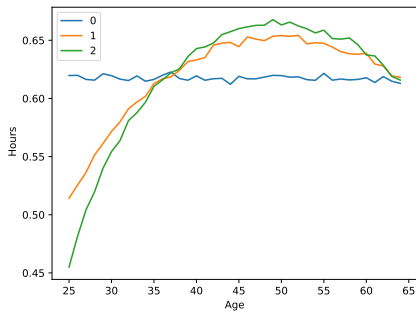


Level

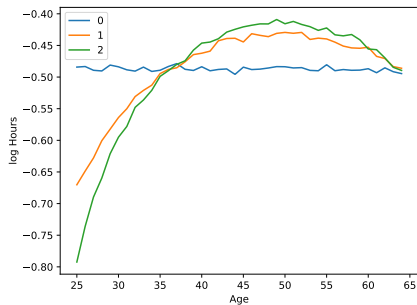


Hours Worked

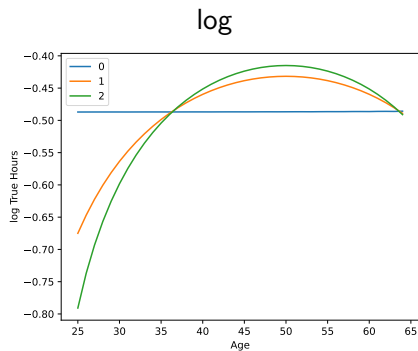
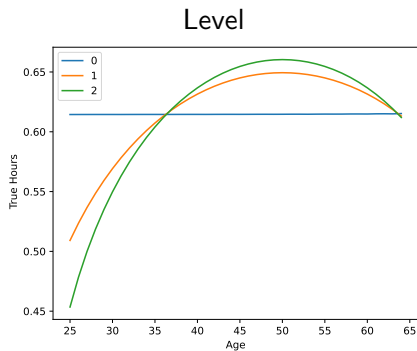
Level



log

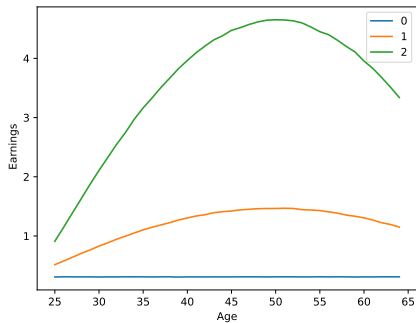


True Hours Worked (No Measurement Error)

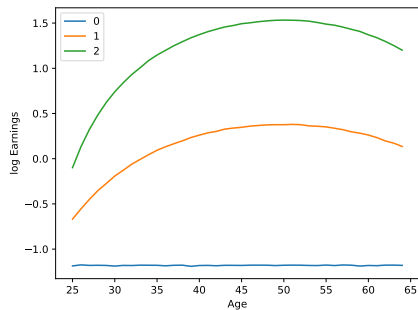


Earnings

Level

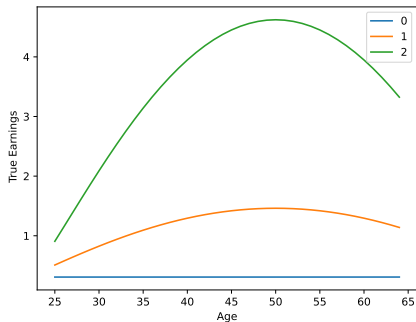


log



True Earnings (No Measurement Error)

Level



log

