Co-variance of 58 and 60

$$y_{60} = \alpha + \varepsilon_{60} + \underbrace{\eta_{60} + \rho\eta_{59}}_{\text{iid (presumably)}} + \rho^2\eta_{58} + \rho^3\eta_{57} + \dots + \rho^{37}\eta_{23}$$

iid

$$y_{58} = \alpha + \varepsilon_{58} + \dots + \eta_{58} + \rho\eta_{57} + \dots + \rho^{35}\eta_{23}$$

$$\alpha^2 \qquad \rho^2\eta_{58} + \rho^4\eta_{57} + \dots + \rho^{72}\eta_{23}$$

$$\mathrm{Cov}(y_{60}, y_{58}) = \sigma_\alpha^2 + \sigma_\eta^2 \underbrace{(\rho^2 + \rho^4 + \dots + \rho^{72})}_{\rho^2 \frac{1-\rho^{72}}{1-\rho^2}}$$

This is another geometric sum.

$$a\,\frac{1 - r^{N+1}}{1 - r} \qquad a = \sigma_\eta^2,\ r = \rho^2,\ N = 35$$

1. $$\max \quad \frac{(x-a)^{1-\gamma}-1}{1-\gamma} + \phi_1 \left(1 + \frac{a[1+r(1-\tau_c)](1-\tau_b)}{\phi_2}\right)^{1-\gamma}$$

such that $a \geq 0$

Define $A := [1 + r(1-\tau_c)](1-\tau_b)$

Interior maximum:

negative from moving to other side

$$(x-a)^{-\gamma} = (\gamma - 1)\frac{\phi_1}{\phi_2} A \left(1 + \frac{A}{\phi_2} a\right)^{-\gamma}$$

$$(x-a) = [(\gamma-1)A]^{-\frac{1}{\gamma}} \left[\frac{\phi_1}{\phi_2}\right]^{-\frac{1}{\gamma}} \left(1 + \frac{A}{\phi_2} a\right)$$

Let $B := [(\gamma-1)A]^{-\frac{1}{\gamma}}$ and $\psi := \left(\frac{\phi_1}{\phi_2}\right)^{-\frac{1}{\gamma}}$

$$x - a = B\psi \left(1 + \frac{A}{\phi_2} a\right)$$

$$a = \frac{x - B\psi}{1 + B\psi \frac{A}{\phi_2}}$$

General maximum: $a = \dfrac{\max\{0, x - B\psi\}}{1 + B\psi \frac{A}{\phi_2}}$

Q2

2. $$\underbrace{\frac{a}{x}}_{\text{total resources}}^{\text{bequest}} = \frac{a}{x - B\Psi} \cdot \frac{x - B\Psi}{x} = \underbrace{\frac{1}{1 + B\Psi \frac{A}{\phi_2}}}_{*} \cdot \underbrace{\left(1 - \frac{B\Psi}{x}\right)}_{\bullet}$$

* From the found value of a, which gives a constant, asymptotic share strength of the bequest motive. The value asymptotically approaches this constant.

• luxury. If not luxury, then this would be a constant share of resources.

– we consume or eat in last period. Bequest luxury to consumption

share of $\frac{a}{x}$ should be constant if not a luxury.

ϕ_1 : bequest motive ϕ_2 : luxury.

3. $\Psi = \left(\frac{\phi_1}{\phi_2}\right)^{-\frac{1}{\gamma}}$. So the relative ϕ_1 to ϕ_2 gives the measure of luxury, and $\frac{\phi_1}{\phi_2} \cdot \frac{B\Psi A}{\phi_2}$ gives the bequest motive.

It is not exactly as put in the paper. They have these as ϕ_1 and ϕ_2 being luxury vs. bequest. Of course once we know about these factors ϕ_1 and ϕ_2 identifey these concepts.

4. De Nardi :

ϕ_1 : transfer wealth share (60% in US)

ϕ_2 : average bequest left by singles (\$10,000).