Pijoan-Mas (2006): Precautionary Savings or Working Longer Hours?

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1 Model

Here I present a brief description of the model in Pijoan-Mas (2006). Households face the following problem:

$$V(a,\varepsilon) = \max_{c,a',h} \left\{ \frac{c^{1-\sigma}}{1-\sigma} + \lambda \frac{(1-h)^{1-v}}{1-v} + \beta \sum_{\varepsilon'} \Gamma_{\varepsilon,\varepsilon'} V(a',\varepsilon') \right\}$$

subject to

$$c + a' = w\varepsilon h + (1+r)\, a$$

$$c \geq 0, \quad 0 \leq h \leq 1, \quad a' \geq 0.$$

The individual state variables are asset holdings a (endogenous state variable) and the idiosyncratic shock ε (exogenous state variable z in the toolkit notation). $\Gamma_{\varepsilon,\varepsilon'}$ denotes the transition matrix of the Markov chain over ε, with $\sum_{\varepsilon'} \Gamma_{\varepsilon,\varepsilon'} = 1$ for all ε. Households choose consumption c, hours of work h and next-period assets a'. The policy function are denoted as $c = g_c(a,\varepsilon)$, $h = g_h(a,\varepsilon)$ and $a' = g_a(a,\varepsilon)$.

Factor prices r and w are pinned down by the first-order conditions of the representative firm

$$r = (1-\theta)\left(\frac{K}{L}\right)^{-\theta} - \delta$$

$$w = \theta\left(\frac{K}{L}\right)^{1-\theta}$$

and the aggregate production function is

$$Y = K^{1-\theta} L^{\theta}.$$

The market clearing conditions are

$$K = \int g_a(a,\varepsilon)\, d\mu(a,\varepsilon)$$

and

$$L = \int \varepsilon g_h(a, \varepsilon)\, d\mu(a, \varepsilon),$$

where μ is the stationary distribution. Then, by Walras' law, the aggregate resource constraint of the economy is automatically satisfied:

$$C + \delta K = K^{1-\theta} L^{\theta}.$$

References

Pijoan-Mas, Josep, "Precautionary Savings or Working Longer Hours?," *Review of Economic Dynamics*, April 2006, *9* (2), 326–352. 1