An RBC model with endogenous labor supply (Frisch elasticity-based)

Recursive formulation

The representative household solves the following problem:

$$V(a;S) = \max_{c,a'} \frac{c^{1-\sigma}}{1-\sigma} - \frac{\eta}{1+\frac{1}{\chi}} L^{1+\frac{1}{\chi}} + \beta \mathbb{E} V(a';S')$$
$$\text{s.t. } (1+\tau^c)c + a' = (1+(1-\tau^r)r(S))a + (1-\tau^w)w(S)L$$

where the aggregate state S is as follows

$$S = [K, A].$$

K is the aggregate capital stock. A is TFP that follows the log AR(1) process:

$$log(A') = \rho log(A) + \sigma\epsilon, \quad \sigma \sim N(0,1).$$

c is consumption, a is the wealth in the beginning of a period. ϕ is the parameter that governs the degree of the partial irreversibility.