A canonical RBC model

Recursive formulation

The representative household solves the following problem:

$$V(a;S) = \max_{c,a',L} logC + \theta log(1 - L) + \beta \mathbb{E} V(a';S')$$

$$\text{s.t. } (1 + \tau^c)c + a' = (1 + (1 - \tau^r)r(S))a + (1 - \tau^w)w(S)L$$

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, and a is the wealth in the beginning of a period.