1 RBC model

$$\max_{K_{t+1},H_t,C_t} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\frac{C_t^{1-\eta}}{1-\eta} - \frac{H_t^{1+\psi}}{1+\psi} \right]$$

Subject to

$$C_t + K_{t+1} = Z_t K_t^{\alpha} H_t^{1-\alpha} + (1-\delta)K_t + I_t$$
$$Z_{t+1} = \rho Z_t + \sigma \varepsilon_t \sim \mathcal{N}(0,1)$$

2 RBC model with non negativity constraint

$$\max_{K_{t+1},H_t,C_t} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\frac{C_t^{1-\eta}}{1-\eta} - \frac{H_t^{1+\psi}}{1+\psi} \right]$$

Subject to

$$C_t + I_t = Z_t K_t^{\alpha} H_t^{1-\alpha}$$
$$I_t = K_{t+1} - (1-\delta)K_t \geq 0 \; \Phi \geq 0$$
$$Z_{t+1} = \rho Z_t + \sigma \varepsilon_t \sim \mathcal{N}(0,1)$$