Model with Discrete Housing Choice

Given choice of housing, the choice specific value function is given by

$$v(m_t, y_t) = \max_{c_t} u(c_t) + \kappa h_{t+1} + \beta \, \mathrm{E}_t \left[V(m_{t+1}, y_{t+1}, h_{t+1}) \right] \tag{1}$$

$$\text{s.t.}$$

$$m_{t+1} = (1+r)(m_t - c_t) + y_t \tag{2}$$

$$m_t \geq c_t \tag{3}$$

The continuation value if $h_{t-1} = 0$ is given by

$$V(m_t, y_t | h_{t-1} = 0) = \max_{h_t \in \{0,1\}} v(m_t - p_h h_t, y_t, h_t) \tag{4}$$

$$\text{s.t}$$

$$m_t \geq p_h h_t$$

while the continuation value if $h_{t+1} = 1$ is

$$V(m_t, y_t | h_{t-1} = 1) = \max_{h_t \in \{0,1\}} v(m_t + p_h, y_t, h_t) \tag{5}$$