CIA model as in Walsh p112

The preference of the households is given by:

$$U = E\sum_{t=0}^{\infty}\beta^t\left[\frac{c_t^{1-\Phi}}{1-\Phi}+\Psi\frac{(1-n_t)^{1-\eta}}{1-\eta}\right],\;\; 0<\beta<1 \tag{1}$$

The CIA is given by:

$$c_t \le \frac{m_{t-1}}{1+\pi_t}+\tau_t \tag{2}$$

The budget constraint takes the following form:

$$y_t+(1-\delta)k_{t-1}+\tau_t+\frac{m_{t-1}+(1+i_{t-1})b_{t-1}}{1+\pi_t} \ge c_t+k_t+m_t+b_t \tag{3}$$

Aggregate output, y_t is given by the following production function:

$$y_t = e^{z_t}k_{t-1}^{\alpha}n_t^{1-\alpha} \tag{4}$$

The technology shock follows an AR(1) process and is given by:

$$z_t = \rho z_{t-1}+\xi_t \tag{5}$$

The rate of growth of money is equal to $m_t = \frac{(1+\theta_t)}{1+\pi_t}m_{t-1}$

The FOC are

$$c_t: \quad c_t^{-\Phi} = \lambda_{1t}+\lambda_{2t} \tag{6}$$

$$n_t: \quad \Psi(1-n_t)^{-\eta} = (1-\alpha)\lambda_{2t}\frac{y_t}{n_t} \tag{7}$$

$$k_t: \quad \lambda_{2t} = \beta E_t\left[\lambda_{2t+1}\left(\alpha\frac{y_{t+1}}{k_t}+(1-\delta)\right)\right] \tag{8}$$

$$m_t: \quad \lambda_{2t} = \beta E_t\left(\frac{\lambda_{1t+1}+\lambda_{2t+1}}{1+\pi_{t+1}}\right) \tag{9}$$

$$b_t: \quad \lambda_{2t} = \beta E_t\lambda_{2t+1}\left(\frac{1+i_t}{1+\pi_{t+1}}\right) \tag{10}$$

$$\lambda_{1t}: \quad c_t = \frac{m_{t-1}}{1+\pi_t}+\tau_t \tag{11}$$

$$\lambda_{2t}: \quad c_t+k_t+m_t+b_t = y_t+(1-\delta)k_{t-1}+\frac{m_{t-1}+(1+i_{t-1})b_{t-1}}{1+\pi_t}+\tau_t \tag{12}$$

My Dynare equations are:

$$\Psi(1-n_t)^{-\eta} = E_t\left[\frac{(1-\alpha)\beta}{1+\pi_{t+1}}\right]c_{t+1}^{-\Phi}\left(\frac{y_t}{n_t}\right) \tag{13}$$

$$E_t\left[\frac{\beta}{1+\pi_{t+1}}\right]c_{t+1}^{-\Phi} = E_t\left[\frac{\beta^2}{1+\pi_{t+2}}\right]c_{t+2}^{-\Phi}\left[\frac{\alpha y_{t+1}}{k_t}+(1-\delta)\right] \tag{14}$$

$$y_t = c_t+i_t \tag{15}$$

$$k_t = i_t+(1-\delta)k_{t-1} \tag{16}$$

$$y_t = e^{z_t}k_{t-1}^{\alpha}n_t^{1-\alpha} \tag{17}$$

$$w_t = (1-\alpha)\frac{y_t}{n_t} \tag{18}$$

$$r_t = (1-\alpha)\frac{y_t}{k_{t-1}} \tag{19}$$

$$1 + r_t = \frac{1 + i_t}{1 + \pi_t} \tag{20}$$

$$z_t = \rho_1 z_{t-1} + e1_t \tag{21}$$

$$m_t = \left(\frac{1 + \theta_t}{1 + \pi_t}\right) m_{t-1} \tag{22}$$

$$\theta_t = \rho_2 \theta_{t-1} + \rho_3 z_{t-1} + e2_t \tag{23}$$