

$$\Phi_t = C_t^{\frac{\gamma-1}{\gamma}} + e_t^{\frac{1}{\gamma}} m_t^{\frac{\gamma-1}{\gamma}} \quad (1)$$

$$w_t = \frac{\Phi_t C_t^{\frac{1}{\gamma}} \eta}{a_t (1 - H_t)} \quad (2)$$

$$R_t^{(-1)} = \beta \Pi_{t+1}^{(-1)} \left(\frac{\Phi_{t+1} \mu_{t+1}}{\Phi_t} \right)^{(-1)} \frac{a_{t+1}}{a_t} \left(\frac{C_{t+1} \mu_{t+1}}{C_t} \right)^{\frac{(-1)}{\gamma}} \quad (3)$$

$$C_t e_t = m_t \left(1 - R_t^{(-1)} \right)^\gamma \quad (4)$$

$$\psi_t^1 = \frac{\phi_k}{\mu} \left(\frac{K_t}{\mu K_{t-1} \frac{1}{\mu_t}} - 1 \right) \quad (5)$$

$$\psi_t^2 = \frac{\phi_k}{2} \left(\frac{K_{t+1} \mu_{t+1}}{\mu K_t} - 1 \right)^2 - \frac{\phi_k}{\mu} \left(\frac{K_{t+1} \mu_{t+1}}{\mu K_t} - 1 \right) \frac{K_{t+1} \mu_{t+1}}{K_t} \quad (6)$$

$$\psi_t^1 + \frac{1}{\chi_t} = \beta \left(q_{t+1} + \frac{1-\delta}{\chi_{t+1}} - \psi_t^2 \right) \left(\frac{\Phi_{t+1} \mu_{t+1}}{\Phi_t} \right)^{(-1)} \frac{a_{t+1}}{a_t} \left(\frac{C_{t+1} \mu_{t+1}}{C_t} \right)^{\frac{(-1)}{\gamma}} \quad (7)$$

$$\Lambda_t = \frac{a_t}{\Phi_t C_t^{\frac{1}{\gamma}}} \quad (8)$$

$$w_t H_t \Lambda_t = (1 - \alpha) \Xi_t Y_t \quad (9)$$

$$q_t \Lambda_t K_{t-1} \frac{1}{\mu_t} = Y_t \alpha \Xi_t \quad (10)$$

$$\frac{\Pi_t}{\mu} \Lambda_t \phi^p \left(\frac{\Pi_t}{\mu} - 1 \right) = \Lambda_t (1 - \theta) + \Xi_t \theta + \beta \frac{\Pi_{t+1}}{\mu} \left(\frac{\Pi_{t+1}}{\mu} - 1 \right) \Lambda_{t+1} \frac{1}{\mu_{t+1}} \frac{Y_{t+1} \mu_{t+1}}{Y_t} \quad (11)$$

$$Y_t = H_t^{1-\alpha} \left(K_{t-1} \frac{1}{\mu_t} \right)^\alpha \quad (12)$$

$$K_t = \chi_t I_t + (1 - \delta) K_{t-1} \frac{1}{\mu_t} \quad (13)$$

$$\Psi_t^1 = K_{t-1} \frac{1}{\mu_t} \frac{\phi_k}{2} \left(\frac{K_t}{\mu K_{t-1} \frac{1}{\mu_t}} - 1 \right)^2 \quad (14)$$

$$d_t = Y_t - w_t H_t - q_t K_{t-1} \frac{1}{\mu_t} - Y_t \frac{\phi^p}{2} \left(\frac{\Pi_t}{\mu} - 1 \right)^2 \quad (15)$$

$$d_t + w_t H_t + q_t K_{t-1} \frac{1}{\mu_t} = \Psi_t^1 + C_t + I_t \quad (16)$$

$$\frac{R_t}{R} = \left(\frac{\Pi_t}{\Pi} \right)^{\phi^\Pi} + v_t \quad (17)$$

$$\log(a_t) = \rho^a \log(a_{t-1}) + \epsilon_t^A \quad (18)$$

$$\log(\chi_t) = \rho^x \log(\chi_{t-1}) + \epsilon_t^X \quad (19)$$

$$\log(v_t) = \rho^v \log(v_{t-1}) + \epsilon_t^v \quad (20)$$

$$\log(e_t) = \rho^e \log(e_{t-1}) + (1 - \rho^e) \log(e) + \epsilon_t^e \quad (21)$$

$$\mu_t = \exp(G + \epsilon_t^X) \quad (22)$$