

Model equations

$$\frac{1}{C_t} = \lambda_t \quad (1)$$

$$\frac{\theta^L}{L_t} = \lambda_t(1 - \tau_t)w_t \quad (2)$$

$$\lambda_t = \beta_t [\lambda_{t+1}(1 + q_{t+1}^K - \delta^K)] \quad (3)$$

$$\lambda_t = \beta_t \{ \lambda_{t+1}(1 + q_{t+1}^R - \delta^R) \} \quad (4)$$

$$Y_t = Y_0 e^{z_t^{\mathbb{H}}} \left\{ \begin{aligned} & \theta_0^K \left(\frac{K_{t-1}}{K_0} e^{z_t^K} \right)^{\frac{\sigma-1}{\sigma}} + \\ & (1 - \theta_0^K) \left[\theta_0^R \left(\frac{R_{t-1}}{R_0} e^{z_t^R} \right)^{\frac{\phi-1}{\phi}} + (1 - \theta_0^R) \left(\frac{N_t}{N_0} e^{z_t^N} \right)^{\frac{\phi-1}{\phi}} \right]^{\frac{\phi}{\phi-1} \frac{\sigma-1}{\sigma}} \end{aligned} \right\}^{\frac{\sigma}{\sigma-1}} \quad (5)$$

$$z_t^{\mathbb{H}} = \rho^{\mathbb{H}} z_{t-1}^{\mathbb{H}} + \varepsilon_t^{\mathbb{H}} \quad (6)$$

$$z_t^K = \rho^K z_{t-1}^K + \varepsilon_t^K \quad (7)$$

$$z_t^R = \rho^R z_{t-1}^R + \varepsilon_t^R \quad (8)$$

$$z_t^H = \rho^H z_{t-1}^H + \varepsilon_t^L \quad (9)$$

$$w_t = (1 - \theta_0^K)(1 - \theta_0^R) \left(Y_0 e^{z_t^{\mathbb{H}}} \right)^{\frac{\sigma-1}{\sigma}} \left(\frac{e^{z_t^N}}{N_0} \right)^{\frac{\phi-1}{\phi}} \left(\frac{Y_t}{X_t} \right)^{\frac{1}{\sigma}} \left(\frac{X_t}{N_t} \right)^{\frac{1}{\phi}} \quad (10)$$

$$r_t^K = \theta_0^K \left(\frac{Y_0}{K_0} e^{z_t^{\mathbb{H}}} e^{z_t^K} \right)^{\frac{\sigma-1}{\sigma}} \left(\frac{Y_t}{K_{t-1}} \right)^{\frac{1}{\sigma}} \quad (11)$$

$$r_t^R = (1 - \theta_0^K) \theta_0^R \left(Y_0 e^{z_t^{\mathbb{H}}} \right)^{\frac{\sigma-1}{\sigma}} \left(\frac{e^{z_t^R}}{R_0} \right)^{\frac{\phi-1}{\phi}} \left(\frac{Y_t}{X_t} \right)^{\frac{1}{\sigma}} \left(\frac{X_t}{R_{t-1}} \right)^{\frac{1}{\phi}} \quad (12)$$

$$Y_t = C_t + I_t^K + I_t^R + G_t \quad (13)$$

$$\tau_t Y_t = G_t + TR_t \quad (14)$$

$$G_t = (1 - \rho^G)\bar{g} + \rho^G G_{t-1} + \varepsilon^G \quad (15)$$

$$K_{t+1} = (1 - \delta^K)K_t + I_t^K \quad (16)$$

$$R_{t+1} = (1 - \delta^R)R_t + I_t^R \quad (17)$$