消费者

$$W_t = \frac{\chi \cdot L_t^{\phi}}{U_{C,t}} \tag{1}$$

$$U_{C,t} = (C_t - hC_{t-1})^{-\sigma} - \beta \cdot h \cdot E_t (C_{t+1} - hC_t)^{-\sigma} \tag{2}$$

$$1 = E_t \cdot \beta \cdot \Lambda_{t,t+1} \cdot R_t \tag{3}$$

$$\Lambda_{t,t+1} = \frac{U_{C,t+1}}{U_{C,t}} \tag{4}$$

中间产品厂商

$$Y_{mt} = A_t (\xi_t \cdot U_t \cdot K_{t-1})^{\alpha} L_t^{1-\alpha} \tag{5}$$

$$\delta(U_t) = \delta c + \frac{b}{1+\zeta} * U_t^{1+\zeta} \tag{6}$$

$$R_{k,t+1} = \frac{P_{m,t+1}\alpha \frac{Y_{m,t+1}}{K_t} + \left(1 - \delta\left(U_{t+1}\right)\right) Q_{t+1} \xi_{t+1}}{Q_t} \tag{7}$$

$$W_t = P_{mt}\left(1-\alpha\right)\frac{Y_{mt}}{L_t} \tag{8}$$

$$\delta'\left(U_t\right)\xi_t Q_t K_{t-1} = P_{mt}\alpha \frac{Y_{mt}}{U_t} \tag{9}$$

资本品厂商

$$K_t = (1 - \delta(U_t))\xi_t K_{t-1} + I_t \tag{10}$$

$$Q_t = 1 + f\left(\frac{I_t}{I_{t-1}}\right) + \frac{I_t}{I_{t-1}} f'\left(\frac{I_t}{I_{t-1}}\right) - E_t \beta \Lambda_{t,t+1} \left(\frac{I_{t+1}}{I_t}\right)^2 f'\left(\frac{I_{t+1}}{I_t}\right) \tag{11}$$

$$f\left(\frac{I_t}{I_{t-1}}\right) = \frac{\eta_i}{2}\left(\frac{I_t}{I_{t-1}} - 1\right)^2 \tag{12}$$

最终产品厂商：

$$\frac{\Pi_t^*}{\Pi_t} = \frac{P_t^*}{P_t} = \frac{\varepsilon}{\varepsilon - 1} \cdot \frac{E_t \sum_{i=0}^{\infty} \{(\gamma\beta)^i \cdot \Lambda_{t,t+i} [\prod_{k=1}^{i} (\frac{\Pi_{t+k-1}^{\gamma_p}}{\Pi_{t+k}})]^{-\varepsilon} \cdot P_{m,t+i} \cdot Y_{t+i}\}}{E_t \sum_{i=0}^{\infty} \{(\gamma\beta)^i \cdot \Lambda_{t,t+i} [\prod_{k=1}^{i} (\frac{\Pi_{t+k-1}^{\gamma_p}}{\Pi_{t+k}})]^{1-\varepsilon} \cdot Y_{t+i}\}} \varphi_t^{\pi} \tag{13}$$

$$Y_{mt} = \Delta_{p,t} Y_t \tag{14}$$

$$\Delta_{p,t} = \gamma \Delta_{p,t-1} \Pi_t^{\varepsilon} \Pi_{t-1}^{-\gamma_p \cdot \varepsilon} + \left(1-\gamma\right)\left(\frac{1 - \gamma \cdot \Pi_t^{\varepsilon-1} \Pi_{t-1}^{-\gamma_p \cdot (\varepsilon-1)}}{1-\gamma}\right)^{\frac{\varepsilon}{\varepsilon-1}} \tag{15}$$

$$X_t = \frac{1}{P_{mt}} \tag{16}$$

$$\Pi_t^{1-\varepsilon} = (1-\gamma)\left(\Pi_t^*\right)^{1-\varepsilon} + \gamma \cdot \Pi_{t-1}^{\gamma_p(1-\varepsilon)} \tag{17}$$

银行部门

$$\nu_{kjt} = \lambda \frac{\mu_{jt}}{1+\mu_{jt}} \tag{18}$$

$$\nu_{bjt} = \lambda_b \frac{\mu_{jt}}{1+\mu_{jt}} \tag{19}$$

$$Q_t K_{jt} = \frac{\nu_{bjt} - \lambda_b}{\lambda - \nu_{kjt}} Q_t^b B_{jt} + \frac{\nu_{njt}}{\lambda - \nu_{kjt}} N_{jt} \tag{20}$$

$$\Omega_{jt} \equiv \Lambda_{t-1,t}[(1-\theta) + \theta(1+\mu_{jt})\nu_{njt}] \tag{21}$$

$$\nu_{kjt} = \beta E_t \Omega_{jt+1}(R_{k,t+1} - R_t) \tag{22}$$

$$\nu_{bjt} = \beta E_t \Omega_{jt+1}(R_{b,t+1} - R_t) \tag{23}$$

$$\nu_{njt} = \beta E_t \Omega_{jt+1} R_t \tag{24}$$

$$\phi_t \equiv \frac{\nu_{nt}(1+\varsigma_t)}{(\lambda - \nu_{kt})\left(1 + \frac{\lambda_b}{\lambda}\varsigma_t\right)} = \frac{Q_t K_t + Q_t^b B_t}{N_t} \tag{25}$$

$$\phi_t = \frac{1}{\kappa_t} \tag{26}$$

$$Q_t K_{jt} + Q_t^b B_{jt} = N_{jt} + D_{jt} \tag{27}$$

$$Z_t = Q_t K_{jt} / Q_t^b B_{jt} \tag{28}$$

$$N_{ot} = \theta\left[R_{kt} Q_{t-1} K_{t-1} + R_{bt} Q_{t-1}^b B_{t-1} - R_{t-1} D_{t-1}\right] \tag{29}$$

$$N_{nt} = \omega\left[Q_{t-1} K_{t-1} + Q_{t-1}^b B_{t-1}\right] \tag{30}$$

$$N_t = N_{ot} + N_{nt} \tag{31}$$

政府部门

$$\frac{G_t}{\overline{G}} = \left(\frac{G_{t-1}}{\overline{G}}\right)^{\rho_G} \left[\left(\frac{Y_t}{\overline{Y}}\right)^{\kappa_y^G}\right]^{1-\rho_G} \tag{32}$$

$$\frac{B_t}{\overline{B}} = \left(\frac{B_{t-1}}{\overline{B}}\right)^{\rho_B} \left[\left(\frac{B_t / Y_t}{\overline{B}/\overline{Y}}\right)^{\kappa_{by}} \left(\frac{Y_{t-1}}{\overline{Y}}\right)^{\kappa_y^B}\right]^{1-\rho_B} \tag{33}$$

$$R_{b,t} = \left(1 - \Delta_t^d * D\right)\left[\frac{r_c + \rho_c Q_t^b}{Q_{t-1}^b}\right] \tag{34}$$

$$G_t + R_{bt} Q_{t-1}^b B_{t-1} = Q_t^b B_t + T_t \tag{35}$$

$$\Delta_t^d = \frac{\exp\left(\eta_1 + \eta_2 \frac{B_t}{4Y_t}\right)}{1 + \exp\left(\eta_1 + \eta_2 \frac{B_t}{4Y_t}\right)} \tag{36}$$

$$prem_t = \frac{E_t R_{kt+1}}{R_t} \tag{37}$$

$$prem_t^b = \frac{E_t R_{bt+1}}{R_t} \tag{38}$$

$$\frac{i_t}{\bar{i}} = \left(\frac{i_{t-1}}{\bar{i}}\right)^{\rho_R}\left[\left(\frac{\pi_t}{\bar{\pi}}\right)^{\kappa_\pi}\left(\frac{Y_t}{\bar{Y}}\right)^{\kappa_Y}\right]^{1-\rho_R} e^{u_t^R} \tag{39}$$

$$\kappa_t = \bar{\kappa} + \kappa_{ca}\left(\frac{Q_t K_t + Q_t^b B_t}{Y_t} - \frac{QK + Q^b B}{Y}\right) \tag{40}$$

$$i_t = R_t \frac{E_t P_{t+1}}{P_t} \tag{41}$$

市场出清与外部随机过程

$$Y_t = C_t + I_t + f\left(\frac{I_t}{I_{t-1}}\right) I_t + G_t \tag{42}$$

$$A_t = \rho_a \cdot A_t + \varepsilon_t^A \tag{43}$$

$$\varepsilon_t^G = \rho_G \cdot \varepsilon_t^G + \varepsilon_t^g \tag{44}$$

$$\xi_t = \rho_\xi \cdot \xi_{t-1} + \varepsilon_t^\xi \tag{45}$$

$$\varphi_t^\pi = \rho_{\varphi^\pi} \cdot \varphi_{t-1}^\pi + \varepsilon_t^{\varphi^\pi} \tag{46}$$

$$u_t^R = \rho_R u_{t-1}^R + \varepsilon_t^u \tag{47}$$