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1 CONSUMER

1.1 Optimisation problem

$$\max_{C_t,K_t,I_t,B_t,z_t} U_t = \beta \mathrm{E}_t\left[U_{t+1}\right] + \epsilon_t^{\mathrm{b}}\left(\left(1-\sigma^{\mathrm{c}}\right)^{-1}\left(C_t - H_t\right)^{1-\sigma^{\mathrm{c}}} - \omega\epsilon_t^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1} L_t^{\mathrm{s}\,1+\sigma^{\mathrm{l}}}\right) \tag{1.1}$$

s.t. :

$$C_t + I_t + B_t {R_t}^{-1} = D\dot{w}_t - T_t + B_{t-1}{\pi_t}^{-1} + L_t W_t + K_{t-1} r_t^{\mathrm{k}} z_t - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k}} K_{t-1}\left(-1 + e^{\psi(-1+z_t)}\right) \quad (\lambda_t) \tag{1.2}$$

$$K_t = K_{t-1}\left(1-\tau\right) + I_t\left(1 - 0.5\varphi\left(-1 + {I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}} I_t\right)^2\right) \quad (q_t) \tag{1.3}$$

1.2 Identities

$$H_t = hC_{t-1} \tag{1.4}$$

$$Q_t = {\lambda_t}^{-1} q_t \tag{1.5}$$

1.3 First order conditions

$$-\lambda_t + \epsilon_t^{\mathrm{b}}(C_t - H_t)^{-\sigma^{\mathrm{c}}} = 0 \quad (C_t) \tag{1.6}$$

$$-q_t + \beta\left(\left(1-\tau\right)\mathrm{E}_t\left[q_{t+1}\right] + \mathrm{E}_t\left[\lambda_{t+1}\left(r_{t+1}^{\mathrm{k}} z_{t+1} - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k}}\left(-1 + e^{\psi(-1+z_{t+1})}\right)\right)\right]\right) = 0 \quad (K_t) \tag{1.7}$$

$$-\lambda_t + q_t\left(1 - 0.5\varphi\left(-1 + {I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}} I_t\right)^2 - \varphi {I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}} I_t\left(-1 + {I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}} I_t\right)\right) + \beta\varphi {I_t}^{-2}\mathrm{E}_t\left[\epsilon_{t+1}^{\mathrm{I}} q_{t+1} {I_{t+1}}^2\left(-1 + {I_t}^{-1}\epsilon_{t+1}^{\mathrm{I}} I_{t+1}\right)\right] = 0 \quad (I_t) \tag{1.8}$$

$$\beta\mathrm{E}_t\left[\lambda_{t+1}{\pi_{t+1}}^{-1}\right] - \lambda_t {R_t}^{-1} = 0 \quad (B_t) \tag{1.9}$$

$$\lambda_t\left(K_{t-1} r_t^{\mathrm{k}} - r_{\mathrm{ss}}^{\mathrm{k}} K_{t-1} e^{\psi(-1+z_t)}\right) = 0 \quad (z_t) \tag{1.10}$$

2 PREFERENCE SHOCKS

2.1 Identities

$$\log \epsilon_t^{\mathrm{b}} = \eta_t^{\mathrm{b}} + \rho^{\mathrm{b}} \log \epsilon_{t-1}^{\mathrm{b}} \tag{2.1}$$

$$\log \epsilon_t^{\mathrm{L}} = -\eta_t^{\mathrm{L}} + \rho^{\mathrm{L}} \log \epsilon_{t-1}^{\mathrm{L}} \tag{2.2}$$

3 INVESTMENT COST SHOCKS

3.1 Identities

$$\log \epsilon_t^{\mathrm{I}} = \eta_t^{\mathrm{I}} + \rho^{\mathrm{I}} \log \epsilon_{t-1}^{\mathrm{I}} \tag{3.1}$$

4 WAGE SETTING PROBLEM

4.1 Identities

$$f_t^1 = \beta \xi^{\mathrm{w}} \mathrm{E}_t \left[f_{t+1}^1 \left(w_t^{\star -1} w_{t+1}^{\star} \right)^{\lambda^{\mathrm{w}-1}} \left({\pi_{t+1}}^{-1} {\pi_t}^{\gamma^{\mathrm{w}}} \right)^{-\lambda^{\mathrm{w}-1}} \right] + \lambda_t w_t^{\star} L_t \left(1 + \lambda^{\mathrm{w}}\right)^{-1} {\pi_t^{\star}}^{\mathrm{w} - \lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})} \tag{4.1}$$

$$f_t^2 = \beta \xi^{\mathrm{w}} \mathrm{E}_t \left[f_{t+1}^2 \left(w_t^{\star -1} w_{t+1}^{\star} \right)^{\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})\left(1+\sigma^{\mathrm{l}}\right)} \left({\pi_{t+1}}^{-1} {\pi_t}^{\gamma^{\mathrm{w}}} \right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})\left(1+\sigma^{\mathrm{l}}\right)} \right] + \omega \epsilon_t^{\mathrm{b}} \epsilon_t^{\mathrm{L}} \left(L_t {\pi_t^{\star}}^{\mathrm{w} - \lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})} \right)^{1+\sigma^{\mathrm{l}}} \tag{4.2}$$

$$f_t^1 = \eta_t^{\mathrm{w}} + f_t^2 \tag{4.3}$$

$${\pi_t^{\star}}^{\mathrm{w}} = w_t^{\star} {W_t}^{-1} \tag{4.4}$$

5 WAGE EVOLUTION

5.1 Identities

$$1 = \left(1 - \xi^{\mathrm{w}}\right) {\pi_t^{\star}}^{\mathrm{w} - \lambda^{\mathrm{w}-1}} + \xi^{\mathrm{w}} \left(W_{t-1} {W_t}^{-1} \right)^{-\lambda^{\mathrm{w}-1}} \left({\pi_t}^{-1} {\pi_{t-1}}^{\gamma^{\mathrm{w}}} \right)^{-\lambda^{\mathrm{w}-1}} \tag{5.1}$$

6 LABOUR AGGREGATION

6.1 Identities

$$\nu_t^{\mathrm{w}} = (1-\xi^{\mathrm{w}})\,{\pi_t^\star}^{\mathrm{w}-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})} + \xi^{\mathrm{w}}\nu_{t-1}^{\mathrm{w}}\left(W_{t-1}{\pi_t}^{-1}{W_t}^{-1}{\pi_{t-1}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})} \tag{6.1}$$

$$L_t = {\nu_t^{\mathrm{w}}}^{-1} L_t^{\mathrm{s}} \tag{6.2}$$

7 CONSUMER FLEXIBLE

7.1 Optimisation problem

$$\max_{C_t^{\mathrm{f}},K_t^{\mathrm{f}},I_t^{\mathrm{f}},B_t^{\mathrm{f}},z_t^{\mathrm{f}},{L_t^{\mathrm{s}}}^{\mathrm{f}}} U_t^{\mathrm{f}} = \beta \mathrm{E}_t\left[U_{t+1}^{\mathrm{f}}\right] + \epsilon_t^{\mathrm{b}}\left((1-\sigma^{\mathrm{c}})^{-1}\left(C_t^{\mathrm{f}} - H_t^{\mathrm{f}}\right)^{1-\sigma^{\mathrm{c}}} - \omega\epsilon_t^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1}{L_t^{\mathrm{s}}}^{\mathrm{f}\,1+\sigma^{\mathrm{l}}}\right) \tag{7.1}$$

s.t. :

$$C_t^{\mathrm{f}} + I_t^{\mathrm{f}} + B_t^{\mathrm{f}}{R_t^{\mathrm{f}}}^{-1} = B_{t-1}^{\mathrm{f}} + D\dot{w}_t^{\mathrm{f}} + \Pi_t^{\mathrm{ws}^{\mathrm{f}}} - T_t^{\mathrm{f}} + {L_t^{\mathrm{s}}}^{\mathrm{f}} W_t^{\mathrm{disutil}^{\mathrm{f}}} + K_{t-1}^{\mathrm{f}} r_t^{\mathrm{k}^{\mathrm{f}}} z_t^{\mathrm{f}} - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}} K_{t-1}^{\mathrm{f}}\left(-1 + e^{\psi\left(-1+z_t^{\mathrm{f}}\right)}\right) \quad \left(\lambda_t^{\mathrm{f}}\right) \tag{7.2}$$

$$K_t^{\mathrm{f}} = K_{t-1}^{\mathrm{f}}(1-\tau) + I_t^{\mathrm{f}}\left(1 - 0.5\varphi\left(-1 + {I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}} I_t^{\mathrm{f}}\right)^2\right) \quad \left(q_t^{\mathrm{f}}\right) \tag{7.3}$$

7.2 Identities

$$H_t^{\mathrm{f}} = hC_{t-1}^{\mathrm{f}} \tag{7.4}$$

$$Q_t^{\mathrm{f}} = {\lambda_t^{\mathrm{f}}}^{-1} q_t^{\mathrm{f}} \tag{7.5}$$

7.3 First order conditions

$$-\lambda_t^{\mathrm{f}} + \epsilon_t^{\mathrm{b}}\left(C_t^{\mathrm{f}} - H_t^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}} = 0 \quad \left(C_t^{\mathrm{f}}\right) \tag{7.6}$$

$$-q_t^{\mathrm{f}} + \beta\left((1-\tau)\,\mathrm{E}_t\left[q_{t+1}^{\mathrm{f}}\right] + \mathrm{E}_t\left[\lambda_{t+1}^{\mathrm{f}}\left(r_{t+1}^{\mathrm{k}^{\mathrm{f}}} z_{t+1}^{\mathrm{f}} - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}\left(-1 + e^{\psi\left(-1+z_{t+1}^{\mathrm{f}}\right)}\right)\right)\right]\right) = 0 \quad \left(K_t^{\mathrm{f}}\right) \tag{7.7}$$

$$-\lambda_t^{\mathrm{f}} + q_t^{\mathrm{f}}\left(1 - 0.5\varphi\left(-1 + {I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}} I_t^{\mathrm{f}}\right)^2 - \varphi {I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}} I_t^{\mathrm{f}}\left(-1 + {I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}} I_t^{\mathrm{f}}\right)\right) + \beta\varphi {I_t^{\mathrm{f}}}^{-2}\mathrm{E}_t\left[\epsilon_{t+1}^{\mathrm{I}} q_{t+1}^{\mathrm{f}} {I_{t+1}^{\mathrm{f}}}^2\left(-1 + {I_t^{\mathrm{f}}}^{-1}\epsilon_{t+1}^{\mathrm{I}} I_{t+1}^{\mathrm{f}}\right)\right] = 0 \quad \left(I_t^{\mathrm{f}}\right) \tag{7.8}$$

$$\beta\mathrm{E}_t\left[\lambda_{t+1}^{\mathrm{f}}\right] - \lambda_t^{\mathrm{f}}{R_t^{\mathrm{f}}}^{-1} = 0 \quad \left(B_t^{\mathrm{f}}\right) \tag{7.9}$$

$$\lambda_t^{\mathrm{f}}\left(K_{t-1}^{\mathrm{f}} r_t^{\mathrm{k}^{\mathrm{f}}} - r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}} K_{t-1}^{\mathrm{f}} e^{\psi\left(-1+z_t^{\mathrm{f}}\right)}\right) = 0 \quad \left(z_t^{\mathrm{f}}\right) \tag{7.10}$$

$$\lambda_t^{\mathrm{f}} W_t^{\mathrm{disutil}^{\mathrm{f}}} - \omega \epsilon_t^{\mathrm{b}} \epsilon_t^{\mathrm{L}} L_t^{\mathrm{s}^{\mathrm{f}}{}^{\sigma^1}} = 0 \quad \left(L_t^{\mathrm{s}^{\mathrm{f}}}\right) \tag{7.11}$$

8 FLEXIBLE MONOPOLISTIC WORKER

8.1 Optimisation problem

$$\max_{W_t^{\mathrm{i}^{\mathrm{f}}}, L_t^{\mathrm{i}^{\star^{\mathrm{f}}}}} \Pi_t^{\mathrm{ws}^{\mathrm{f}}} = L_t^{\mathrm{i}^{\star^{\mathrm{f}}}} \left(-W_t^{\mathrm{disutil}^{\mathrm{f}}} + W_t^{\mathrm{i}^{\mathrm{f}}}\right) \tag{8.1}$$

s.t. :

$$L_t^{\mathrm{i}^{\star^{\mathrm{f}}}} = L_t^{\mathrm{f}} \left(W_t^{\mathrm{i}^{\mathrm{f}}} W_t^{\mathrm{f}^{-1}}\right)^{\lambda^{\mathrm{w}-1}(-1-\lambda^{\mathrm{w}})} \quad \left(\lambda_t^{\mathrm{FLEXIBLE}^{\mathrm{MONOPOLISTIC}^{\mathrm{WORKER}^1}}}\right) \tag{8.2}$$

8.2 Identities

$$L_t^{\mathrm{i}^{\star^{\mathrm{f}}}} = L_t^{\mathrm{i}^{\mathrm{f}}} \tag{8.3}$$

8.3 First order conditions

$$L_t^{\mathrm{i}^{\star^{\mathrm{f}}}} + \lambda^{\mathrm{w}-1} \lambda_t^{\mathrm{FLEXIBLE}^{\mathrm{MONOPOLISTIC}^{\mathrm{WORKER}^1}}} L_t^{\mathrm{f}} W_t^{\mathrm{f}^{-1}} \left(-1-\lambda^{\mathrm{w}}\right) \left(W_t^{\mathrm{i}^{\mathrm{f}}} W_t^{\mathrm{f}^{-1}}\right)^{-1+\lambda^{\mathrm{w}-1}(-1-\lambda^{\mathrm{w}})} = 0 \quad \left(W_t^{\mathrm{i}^{\mathrm{f}}}\right) \tag{8.4}$$

$$-\lambda_t^{\mathrm{FLEXIBLE}^{\mathrm{MONOPOLISTIC}^{\mathrm{WORKER}^1}}} - W_t^{\mathrm{disutil}^{\mathrm{f}}} + W_t^{\mathrm{i}^{\mathrm{f}}} = 0 \quad \left(L_t^{\mathrm{i}^{\star^{\mathrm{f}}}}\right) \tag{8.5}$$

8.4 First order conditions after reduction

$$L_t^{\mathrm{i}^{\star^{\mathrm{f}}}} + \lambda^{\mathrm{w}-1} L_t^{\mathrm{f}} W_t^{\mathrm{f}^{-1}} \left(-1-\lambda^{\mathrm{w}}\right) \left(-W_t^{\mathrm{disutil}^{\mathrm{f}}} + W_t^{\mathrm{i}^{\mathrm{f}}}\right) \left(W_t^{\mathrm{i}^{\mathrm{f}}} W_t^{\mathrm{f}^{-1}}\right)^{-1+\lambda^{\mathrm{w}-1}(-1-\lambda^{\mathrm{w}})} = 0 \quad \left(W_t^{\mathrm{i}^{\mathrm{f}}}\right) \tag{8.6}$$

9 LABOUR AGGREGATION FLEXIBLE

9.1 Identities

$$L_t^{\mathrm{s}^{\mathrm{f}}} = L_t^{\mathrm{i}^{\mathrm{f}}} \tag{9.1}$$

$$L_t^{\mathrm{f}} = L_t^{\mathrm{s}^{\mathrm{f}}} \tag{9.2}$$

10 FIRM

10.1 Optimisation problem

$$\max_{K_t^{\mathrm{jd}},L_t^{\mathrm{jd}}} tc_t^{\mathrm{j}} = -r_t^{\mathrm{k}}K_t^{\mathrm{jd}} - L_t^{\mathrm{jd}}W_t \tag{10.1}$$

s.t. :

$$Y_t^{\mathrm{j}} = -\Phi + \epsilon_t^{\mathrm{a}}{K_t^{\mathrm{jd}}}^{\alpha}{L_t^{\mathrm{jd}}}^{1-\alpha} \quad (mc_t) \tag{10.2}$$

10.2 First order conditions

$$-r_t^{\mathrm{k}} + \alpha\epsilon_t^{\mathrm{a}}mc_t{K_t^{\mathrm{jd}}}^{-1+\alpha}{L_t^{\mathrm{jd}}}^{1-\alpha} = 0 \quad \left(K_t^{\mathrm{jd}}\right) \tag{10.3}$$

$$-W_t + \epsilon_t^{\mathrm{a}}mc_t\left(1-\alpha\right){K_t^{\mathrm{jd}}}^{\alpha}{L_t^{\mathrm{jd}}}^{-\alpha} = 0 \quad \left(L_t^{\mathrm{jd}}\right) \tag{10.4}$$

11 TECHNOLOGY

11.1 Identities

$$\log\epsilon_t^{\mathrm{a}} = \eta_t^{\mathrm{a}} + \rho^{\mathrm{a}}\log\epsilon_{t-1}^{\mathrm{a}} \tag{11.1}$$

12 PRICE SETTING PROBLEM

12.1 Identities

$$g_t^1 = \eta_t^{\mathrm{p}} + g_t^2\left(1+\lambda^{\mathrm{p}}\right) \tag{12.1}$$

$$g_t^1 = \lambda_t\pi_t^{\star}Y_t + \beta\xi^{\mathrm{p}}\pi_t^{\star}\mathrm{E}_t\left[g_{t+1}^1\pi_{t+1}^{\star}{}^{-1}\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}}-1}\right] \tag{12.2}$$

$$g_t^2 = \beta\xi^{\mathrm{p}}\mathrm{E}_t\left[g_{t+1}^2\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}}-1\left(1+\lambda^{\mathrm{p}}\right)}\right] + \lambda_t mc_t Y_t \tag{12.3}$$

13 PRICE EVOLUTION

13.1 Identities

$$1 = \xi^{\mathrm{p}}\left({\pi_t}^{-1}{\pi_{t-1}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}}-1} + \left(1-\xi^{\mathrm{p}}\right)\pi_t^{\star}{}^{-\lambda^{\mathrm{p}}-1} \tag{13.1}$$

14 FACTOR DEMAND AGGREGATION

14.1 Identities

$$K_t^{\mathrm{d}} = K_t^{\mathrm{j^d}} \tag{14.1}$$

$$L_t^{\mathrm{d}} = L_t^{\mathrm{j^d}} \tag{14.2}$$

15 PRODUCT AGGREGATION

15.1 Identities

$$Y_t^{\mathrm{s}} = Y_t^{\mathrm{j}} \tag{15.1}$$

$$\nu_t^{\mathrm{p}} = (1-\xi^{\mathrm{p}})\,\pi_t^{\star\,-\lambda^{\mathrm{p}\,-1}(1+\lambda^{\mathrm{p}})} + \xi^{\mathrm{p}}\nu_{t-1}^{\mathrm{p}}\left({\pi_t}^{-1}{\pi_{t-1}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}\,-1}(1+\lambda^{\mathrm{p}})} \tag{15.2}$$

$$\nu_t^{\mathrm{p}} Y_t = Y_t^{\mathrm{s}} \tag{15.3}$$

16 FIRM FLEXIBLE

16.1 Optimisation problem

$$\max_{K_t^{\mathrm{j^df}},L_t^{\mathrm{j^df}}} tc_t^{\mathrm{j^f}} = -r_t^{\mathrm{k^f}} K_t^{\mathrm{j^df}} - L_t^{\mathrm{j^df}} W_t^{\mathrm{f}} \tag{16.1}$$

s.t. :

$$Y_t^{\mathrm{j^f}} = -\Phi + \epsilon_t^{\mathrm{a}} {K_t^{\mathrm{j^df}}}^{\alpha} {L_t^{\mathrm{j^df}}}^{1-\alpha} \qquad \left(mc_t^{\mathrm{f}}\right) \tag{16.2}$$

16.2 First order conditions

$$-r_t^{\mathrm{k^f}} + \alpha\epsilon_t^{\mathrm{a}} mc_t^{\mathrm{f}} {K_t^{\mathrm{j^df}}}^{-1+\alpha} {L_t^{\mathrm{j^df}}}^{1-\alpha} = 0 \quad \left(K_t^{\mathrm{j^df}}\right) \tag{16.3}$$

$$-W_t^{\mathrm{f}} + \epsilon_t^{\mathrm{a}} mc_t^{\mathrm{f}} (1-\alpha)\, {K_t^{\mathrm{j^df}}}^{\alpha} {L_t^{\mathrm{j^df}}}^{-\alpha} = 0 \quad \left(L_t^{\mathrm{j^df}}\right) \tag{16.4}$$

17 PRICE SETTING PROBLEM FLEXIBLE

17.1 Optimisation problem

$$\max_{Y_t^{\mathrm{j^f}}, P_t^{\mathrm{j^f}}} \Pi_t^{\mathrm{ps^f}} = Y_t^{\mathrm{j^f}} \left(-mc_t^{\mathrm{f}} + P_t^{\mathrm{j^f}} \right) \tag{17.1}$$

s.t. :

$$Y_t^{\mathrm{j^f}} = Y_t^{\mathrm{f}} \left(P_t^{\mathrm{f}^{-1}} P_t^{\mathrm{j^f}} \right)^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} \quad \left(\lambda_t^{\mathrm{PRICE^{SETTING^{PROBLEM^{FLEXIBLE^1}}}}} \right) \tag{17.2}$$

17.2 First order conditions

$$-\lambda_t^{\mathrm{PRICE^{SETTING^{PROBLEM^{FLEXIBLE^1}}}}} - mc_t^{\mathrm{f}} + P_t^{\mathrm{j^f}} = 0 \quad \left(Y_t^{\mathrm{j^f}} \right) \tag{17.3}$$

$$Y_t^{\mathrm{j^f}} - \lambda^{\mathrm{p}-1} \lambda_t^{\mathrm{PRICE^{SETTING^{PROBLEM^{FLEXIBLE^1}}}}} P_t^{\mathrm{f}^{-1}} Y_t^{\mathrm{f}} \left(1+\lambda^{\mathrm{p}}\right) \left(P_t^{\mathrm{f}^{-1}} P_t^{\mathrm{j^f}} \right)^{-1-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \quad \left(P_t^{\mathrm{j^f}} \right) \tag{17.4}$$

17.3 First order conditions after reduction

$$Y_t^{\mathrm{j^f}} - \lambda^{\mathrm{p}-1} P_t^{\mathrm{f}^{-1}} Y_t^{\mathrm{f}} \left(1+\lambda^{\mathrm{p}}\right) \left(-mc_t^{\mathrm{f}} + P_t^{\mathrm{j^f}} \right) \left(P_t^{\mathrm{f}^{-1}} P_t^{\mathrm{j^f}} \right)^{-1-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \quad \left(P_t^{\mathrm{j^f}} \right) \tag{17.5}$$

18 FACTOR DEMAND AGGREGATION FLEXIBLE

18.1 Identities

$$K_t^{\mathrm{d^f}} = K_t^{\mathrm{j^{d^f}}} \tag{18.1}$$

$$L_t^{\mathrm{d^f}} = L_t^{\mathrm{j^{d^f}}} \tag{18.2}$$

19 PRODUCT AGGREGATION FLEXIBLE

19.1 Identities

$$Y_t^{\mathrm{s^f}} = Y_t^{\mathrm{j^f}} \tag{19.1}$$

$$Y_t^{\mathrm{f}} = Y_t^{\mathrm{s^f}} \tag{19.2}$$

20 PRICE EVOLUTION FLEXIBLE

20.1 Identities

$$P_t^{\mathrm{f}} = 1 \tag{20.1}$$

21 GOVERNMENT

21.1 Identities

$$G_t = G^{\mathrm{bar}} \epsilon_t^{\mathrm{G}} \tag{21.1}$$

$$G_t + B_{t-1} {\pi_t}^{-1} = T_t + B_t {R_t}^{-1} \tag{21.2}$$

22 GOVERNMENT SPENDING SHOCK

22.1 Identities

$$\log \epsilon_t^{\mathrm{G}} = \eta_t^{\mathrm{G}} + \rho^{\mathrm{G}} \log \epsilon_{t-1}^{\mathrm{G}} \tag{22.1}$$

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23 GOVERNMENT FLEXIBLE

23.1 Identities

$$G_t^{\mathrm{f}} = G^{\mathrm{bar}} \epsilon_t^{\mathrm{G}} \tag{23.1}$$

$$B_{t-1}^{\mathrm{f}} + G_t^{\mathrm{f}} = T_t^{\mathrm{f}} + B_t^{\mathrm{f}} {R_t^{\mathrm{f}}}^{-1} \tag{23.2}$$

24 MONETARY POLICY AUTHORITY

24.1 Identities

$$\mathit{aldbr}^{\pi} + \log\left({R_{\mathrm{ss}}}^{-1} R_t\right) = \eta_t^{\mathrm{R}} + r^{\Delta^{\pi}} \left(-\log\left({\pi_{\mathrm{ss}}}^{-1} \pi_{t-1}\right) + \log\left({\pi_{\mathrm{ss}}}^{-1} \pi_t\right)\right) + r^{\Delta^{\mathrm{y}}} \left(-\log\left({Y_{\mathrm{ss}}}^{-1} Y_{t-1}\right) + \log\left({Y_{\mathrm{ss}}}^{-1} Y_t\right) + \log\left({Y_{\mathrm{ss}}^{\mathrm{f}}}^{-1} Y_{t-1}^{\mathrm{f}}\right) - \log\left({Y_{\mathrm{ss}}^{\mathrm{f}}}^{-1} Y_t^{\mathrm{f}}\right)\right) + \rho \log\left({R_{\mathrm{ss}}}^{-1} R_{t-1}\right) + (1-\rho)\left(\log \right. \tag{24.1}$$

$$\log \pi_t^{\mathrm{obj}} = \eta_t^{\pi} + {\rho^{\pi}}^{\mathrm{bar}} \log \pi_{t-1}^{\mathrm{obj}} + \log \mathit{aldbr}^{{\pi}^{\mathrm{obj}}} \left(1 - {\rho^{\pi}}^{\mathrm{bar}}\right) \tag{24.2}$$

25 EQUILIBRIUM

25.1 Identities

$$K_t^{\mathrm{d}} = K_{t-1} z_t \tag{25.1}$$

$$L_t = L_t^{\mathrm{d}} \tag{25.2}$$

$$B_t = 0 \tag{25.3}$$

$$Div_t = Y_t - L_t^{\mathrm{d}} W_t - r_t^{\mathrm{k}} K_t^{\mathrm{d}} \tag{25.4}$$

26 EQUILIBRIUM FLEXIBLE

26.1 Identities

$$K_t^{\mathrm{d^f}} = K_{t-1}^{\mathrm{f}} z_t^{\mathrm{f}} \tag{26.1}$$

$$L_t^{\mathrm{f}} = L_t^{\mathrm{d^f}} \tag{26.2}$$

$$B_t^{\mathrm{f}} = 0 \tag{26.3}$$

$$Div_t^{\mathrm{f}} = Y_t^{\mathrm{f}} - L_t^{\mathrm{d^f}} W_t^{\mathrm{f}} - r_t^{\mathrm{k^f}} K_t^{\mathrm{d^f}} \tag{26.4}$$

27 Equilibrium relationships (after reduction)

$$-q_t + \beta \left((1-\tau) \, \mathrm{E}_t \left[q_{t+1} \right] + \mathrm{E}_t \left[\epsilon_{t+1}^{\mathrm{b}} \left(r_{t+1}^{\mathrm{k}} z_{t+1} - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k}} \left(-1 + e^{\psi(-1+z_{t+1})} \right) \right) \left(C_{t+1} - hC_t \right)^{-\sigma^{\mathrm{c}}} \right] \right) = 0 \tag{27.1}$$

$$-q_t^{\mathrm{f}} + \beta \left((1-\tau) \, \mathrm{E}_t \left[q_{t+1}^{\mathrm{f}} \right] + \mathrm{E}_t \left[\epsilon_{t+1}^{\mathrm{b}} \left(r_{t+1}^{\mathrm{k^f}} z_{t+1}^{\mathrm{f}} - \psi^{-1} r_{\mathrm{ss}}^{\mathrm{k^f}} \left(-1 + e^{\psi\left(-1+z_{t+1}^{\mathrm{f}}\right)} \right) \right) \left(C_{t+1}^{\mathrm{f}} - hC_t^{\mathrm{f}} \right)^{-\sigma^{\mathrm{c}}} \right] \right) = 0 \tag{27.2}$$

$$-r_t^{\mathrm{k}} + \alpha \epsilon_t^{\mathrm{a}} mc_t {L_t}^{1-\alpha} (K_{t-1} z_t)^{-1+\alpha} = 0 \tag{27.3}$$

$$-r_t^{\mathrm{k^f}} + \alpha \epsilon_t^{\mathrm{a}} mc_t^{\mathrm{f}} {L_t^{\mathrm{f}}}^{1-\alpha} \left(K_{t-1}^{\mathrm{f}} z_t^{\mathrm{f}} \right)^{-1+\alpha} = 0 \tag{27.4}$$

$$-G_t + T_t = 0 \tag{27.5}$$

$$-G_t + G^{\mathrm{bar}} \epsilon_t^{\mathrm{G}} = 0 \tag{27.6}$$

$$-G_t^{\mathrm{f}} + T_t^{\mathrm{f}} = 0 \tag{27.7}$$

$$-G_t^{\mathrm{f}} + G^{\mathrm{bar}} \epsilon_t^{\mathrm{G}} = 0 \tag{27.8}$$

$$-L_t + \nu_t^{\mathrm{w}^{-1}} L_t^{\mathrm{s}} = 0 \tag{27.9}$$

$$-L_t^{\mathrm{s}^{\mathrm{f}}} + L_t^{\mathrm{f}} \left(W_t^{\mathrm{i}^{\mathrm{f}}} W_t^{\mathrm{f}^{-1}} \right)^{\lambda^{\mathrm{w}^{-1}}(-1-\lambda^{\mathrm{w}})} = 0 \tag{27.10}$$

$$L_t^{\mathrm{s}^{\mathrm{f}}} - L_t^{\mathrm{f}} = 0 \tag{27.11}$$

$$L_t^{\mathrm{s}^{\mathrm{f}}} + \lambda^{\mathrm{w}^{-1}} L_t^{\mathrm{f}} W_t^{\mathrm{f}^{-1}} \left(-1-\lambda^{\mathrm{w}}\right) \left(-W_t^{\mathrm{disutil}^{\mathrm{f}}} + W_t^{\mathrm{i}^{\mathrm{f}}} \right) \left(W_t^{\mathrm{i}^{\mathrm{f}}} W_t^{\mathrm{f}^{-1}} \right)^{-1+\lambda^{\mathrm{w}^{-1}}(-1-\lambda^{\mathrm{w}})} = 0 \tag{27.12}$$

$$\Pi_t^{\mathrm{ws}^{\mathrm{f}}} - L_t^{\mathrm{s}^{\mathrm{f}}} \left(-W_t^{\mathrm{disutil}^{\mathrm{f}}} + W_t^{\mathrm{i}^{\mathrm{f}}} \right) = 0 \tag{27.13}$$

$$\Pi_t^{\mathrm{ps}^{\mathrm{f}}} - Y_t^{\mathrm{f}} \left(-mc_t^{\mathrm{f}} + P_t^{\mathrm{j}^{\mathrm{f}}} \right) P_t^{\mathrm{j}^{\mathrm{f}}{}^{-\lambda^{\mathrm{p}^{-1}}(1+\lambda^{\mathrm{p}})}} = 0 \tag{27.14}$$

$$-Q_t + \epsilon_t^{\mathrm{b}^{-1}} q_t (C_t - hC_{t-1})^{\sigma^{\mathrm{c}}} = 0 \tag{27.15}$$

$$-Q_t^{\mathrm{f}} + \epsilon_t^{\mathrm{b}^{-1}} q_t^{\mathrm{f}} \left(C_t^{\mathrm{f}} - hC_{t-1}^{\mathrm{f}}\right)^{\sigma^{\mathrm{c}}} = 0 \tag{27.16}$$

$$-W_t + \epsilon_t^{\mathrm{a}} mc_t \left(1-\alpha\right) L_t{}^{-\alpha} (K_{t-1} z_t)^{\alpha} = 0 \tag{27.17}$$

$$-W_t^{\mathrm{f}} + \epsilon_t^{\mathrm{a}} mc_t^{\mathrm{f}} \left(1-\alpha\right) L_t^{\mathrm{f}^{-\alpha}} \left(K_{t-1}^{\mathrm{f}} z_t^{\mathrm{f}}\right)^{\alpha} = 0 \tag{27.18}$$

$$Y_t^{\mathrm{s}} - \nu_t^{\mathrm{p}} Y_t = 0 \tag{27.19}$$

$$-Y_t^{\mathrm{f}} + Y_t^{\mathrm{s}^{\mathrm{f}}} = 0 \tag{27.20}$$

$$-Y_t^{\mathrm{s}^{\mathrm{f}}} + Y_t^{\mathrm{f}} P_t^{\mathrm{j}^{\mathrm{f}}{}^{-\lambda^{\mathrm{p}^{-1}}(1+\lambda^{\mathrm{p}})}} = 0 \tag{27.21}$$

$$\beta \mathrm{E}_t \left[\epsilon^{\mathrm{b}}_{t+1} \left(C^{\mathrm{f}}_{t+1} - hC^{\mathrm{f}}_t \right)^{-\sigma^{\mathrm{c}}} \right] - \epsilon^{\mathrm{b}}_t {R^{\mathrm{f}}_t}^{-1} \left(C^{\mathrm{f}}_t - hC^{\mathrm{f}}_{t-1} \right)^{-\sigma^{\mathrm{c}}} = 0 \tag{27.22}$$

$$\beta \mathrm{E}_t \left[\epsilon^{\mathrm{b}}_{t+1} {\pi_{t+1}}^{-1} (C_{t+1} - hC_t)^{-\sigma^{\mathrm{c}}} \right] - \epsilon^{\mathrm{b}}_t {R_t}^{-1} (C_t - hC_{t-1})^{-\sigma^{\mathrm{c}}} = 0 \tag{27.23}$$

$$Y^{\mathrm{f}}_t {P^{\mathrm{j}^{\mathrm{f}}}_t}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} - \lambda^{\mathrm{p}-1} Y^{\mathrm{f}}_t \left(1 + \lambda^{\mathrm{p}}\right) \left(-m\kappa^{\mathrm{f}}_t + P^{\mathrm{j}^{\mathrm{f}}}_t \right) {P^{\mathrm{j}^{\mathrm{f}}}_t}^{-1-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \tag{27.24}$$

$$\epsilon^{\mathrm{b}}_t {W^{\mathrm{disutil}^{\mathrm{f}}}_t} \left(C^{\mathrm{f}}_t - hC^{\mathrm{f}}_{t-1} \right)^{-\sigma^{\mathrm{c}}} - \omega \epsilon^{\mathrm{b}}_t \epsilon^{\mathrm{L}}_t {L^{\mathrm{s}^{\mathrm{f}}}_t}^{\sigma^{\mathrm{l}}} = 0 \tag{27.25}$$

$$-1 + \xi^{\mathrm{p}} \left({\pi_t}^{-1} {\pi_{t-1}}^{\gamma^{\mathrm{p}}} \right)^{-\lambda^{\mathrm{p}-1}} + \left(1 - \xi^{\mathrm{p}}\right) {\pi^{\star}_t}^{-\lambda^{\mathrm{p}-1}} = 0 \tag{27.26}$$

$$-1 + \left(1 - \xi^{\mathrm{w}}\right) \left(w^{\star}_t {W_t}^{-1} \right)^{-\lambda^{\mathrm{w}-1}} + \xi^{\mathrm{w}} \left(W_{t-1} {W_t}^{-1} \right)^{-\lambda^{\mathrm{w}-1}} \left({\pi_t}^{-1} {\pi_{t-1}}^{\gamma^{\mathrm{w}}} \right)^{-\lambda^{\mathrm{w}-1}} = 0 \tag{27.27}$$

$$-\Phi - Y^{\mathrm{s}}_t + \epsilon^{\mathrm{a}}_t {L_t}^{1-\alpha} (K_{t-1} z_t)^{\alpha} = 0 \tag{27.28}$$

$$-\Phi - Y^{\mathrm{f}}_t {P^{\mathrm{j}^{\mathrm{f}}}_t}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} + \epsilon^{\mathrm{a}}_t {L^{\mathrm{f}}_t}^{1-\alpha} \left(K^{\mathrm{f}}_{t-1} z^{\mathrm{f}}_t \right)^{\alpha} = 0 \tag{27.29}$$

$$\eta^{\mathrm{b}}_t - \log \epsilon^{\mathrm{b}}_t + \rho^{\mathrm{b}} \log \epsilon^{\mathrm{b}}_{t-1} = 0 \tag{27.30}$$

$$-\eta^{\mathrm{L}}_t - \log \epsilon^{\mathrm{L}}_t + \rho^{\mathrm{L}} \log \epsilon^{\mathrm{L}}_{t-1} = 0 \tag{27.31}$$

$$\eta^{\mathrm{I}}_t - \log \epsilon^{\mathrm{I}}_t + \rho^{\mathrm{I}} \log \epsilon^{\mathrm{I}}_{t-1} = 0 \tag{27.32}$$

$$\eta^{\mathrm{w}}_t - f^1_t + f^2_t = 0 \tag{27.33}$$

$$\eta^{\mathrm{a}}_t - \log \epsilon^{\mathrm{a}}_t + \rho^{\mathrm{a}} \log \epsilon^{\mathrm{a}}_{t-1} = 0 \tag{27.34}$$

$$\eta^{\mathrm{p}}_t - g^1_t + g^2_t \left(1 + \lambda^{\mathrm{p}}\right) = 0 \tag{27.35}$$

$$\eta^{\mathrm{G}}_t - \log \epsilon^{\mathrm{G}}_t + \rho^{\mathrm{G}} \log \epsilon^{\mathrm{G}}_{t-1} = 0 \tag{27.36}$$

$$-f_t^1+\beta\xi^{\mathrm{w}}\mathrm{E}_t\left[f_{t+1}^1\left(w_t^{\star-1}w_{t+1}^{\star}\right)^{\lambda^{\mathrm{w}-1}}\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}}\right]+\epsilon_t^{\mathrm{b}}w_t^{\star}L_t\left(1+\lambda^{\mathrm{w}}\right)^{-1}\left(C_t-hC_{t-1}\right)^{-\sigma^{\mathrm{c}}}\left(w_t^{\star}{W_t}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}=0 \tag{27.37}$$

$$-f_t^2+\beta\xi^{\mathrm{w}}\mathrm{E}_t\left[f_{t+1}^2\left(w_t^{\star-1}w_{t+1}^{\star}\right)^{\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})(1+\sigma^{\mathrm{l}})}\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})(1+\sigma^{\mathrm{l}})}\right]+\omega\epsilon_t^{\mathrm{b}}\epsilon_t^{\mathrm{L}}\left(L_t\left(w_t^{\star}{W_t}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}\right)^{1+\sigma^{\mathrm{l}}}=0 \tag{27.38}$$

$$-g_t^1+\beta\xi^{\mathrm{p}}\pi_t^{\star}\mathrm{E}_t\left[g_{t+1}^1{\pi_{t+1}^{\star}}^{-1}\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}}\right]+\epsilon_t^{\mathrm{b}}\pi_t^{\star}Y_t(C_t-hC_{t-1})^{-\sigma^{\mathrm{c}}}=0 \tag{27.39}$$

$$-g_t^2+\beta\xi^{\mathrm{p}}\mathrm{E}_t\left[g_{t+1}^2\left({\pi_{t+1}}^{-1}{\pi_t}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})}\right]+\epsilon_t^{\mathrm{b}}mc_tY_t(C_t-hC_{t-1})^{-\sigma^{\mathrm{c}}}=0 \tag{27.40}$$

$$-\nu_t^{\mathrm{w}}+\left(1-\xi^{\mathrm{w}}\right)\left(w_t^{\star}{W_t}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}+\xi^{\mathrm{w}}\nu_{t-1}^{\mathrm{w}}\left(W_{t-1}{\pi_t}^{-1}{W_t}^{-1}{\pi_{t-1}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}=0 \tag{27.41}$$

$$-\nu_t^{\mathrm{p}}+\left(1-\xi^{\mathrm{p}}\right)\pi_t^{\star-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})}+\xi^{\mathrm{p}}\nu_{t-1}^{\mathrm{p}}\left({\pi_t}^{-1}{\pi_{t-1}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})}=0 \tag{27.42}$$

$$-K_t+K_{t-1}\left(1-\tau\right)+I_t\left(1-0.5\varphi\left(-1+{I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}}I_t\right)^2\right)=0 \tag{27.43}$$

$$-K_t^{\mathrm{f}}+K_{t-1}^{\mathrm{f}}\left(1-\tau\right)+I_t^{\mathrm{f}}\left(1-0.5\varphi\left(-1+{I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}}I_t^{\mathrm{f}}\right)^2\right)=0 \tag{27.44}$$

$$U_t-\beta\mathrm{E}_t\left[U_{t+1}\right]-\epsilon_t^{\mathrm{b}}\left(\left(1-\sigma^{\mathrm{c}}\right)^{-1}\left(C_t-hC_{t-1}\right)^{1-\sigma^{\mathrm{c}}}-\omega\epsilon_t^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1}L_t^{\mathrm{s}\,1+\sigma^{\mathrm{l}}}\right)=0 \tag{27.45}$$

$$U_t^{\mathrm{f}}-\beta\mathrm{E}_t\left[U_{t+1}^{\mathrm{f}}\right]-\epsilon_t^{\mathrm{b}}\left(\left(1-\sigma^{\mathrm{c}}\right)^{-1}\left(C_t^{\mathrm{f}}-hC_{t-1}^{\mathrm{f}}\right)^{1-\sigma^{\mathrm{c}}}-\omega\epsilon_t^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1}L_t^{\mathrm{s}^{\mathrm{f}}\,1+\sigma^{\mathrm{l}}}\right)=0 \tag{27.46}$$

$$-\epsilon_t^{\mathrm{b}}(C_t-hC_{t-1})^{-\sigma^{\mathrm{c}}}+q_t\left(1-0.5\varphi\left(-1+{I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}}I_t\right)^2-\varphi{I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}}I_t\left(-1+{I_{t-1}}^{-1}\epsilon_t^{\mathrm{I}}I_t\right)\right)+\beta\varphi{I_t}^{-2}\mathrm{E}_t\left[\epsilon_{t+1}^{\mathrm{I}}q_{t+1}{I_{t+1}}^2\left(-1+{I_t}^{-1}\epsilon_{t+1}^{\mathrm{I}}I_{t+1}\right)\right]=0 \tag{27.47}$$

$$-\epsilon_t^{\mathrm{b}}\left(C_t^{\mathrm{f}}-hC_{t-1}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}}+q_t^{\mathrm{f}}\left(1-0.5\varphi\left(-1+{I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}}I_t^{\mathrm{f}}\right)^2-\varphi{I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}}I_t^{\mathrm{f}}\left(-1+{I_{t-1}^{\mathrm{f}}}^{-1}\epsilon_t^{\mathrm{I}}I_t^{\mathrm{f}}\right)\right)+\beta\varphi{I_t^{\mathrm{f}}}^{-2}\mathrm{E}_t\left[\epsilon_{t+1}^{\mathrm{I}}q_{t+1}^{\mathrm{f}}{I_{t+1}^{\mathrm{f}}}^2\left(-1+{I_t^{\mathrm{f}}}^{-1}\epsilon_{t+1}^{\mathrm{I}}I_{t+1}^{\mathrm{f}}\right)\right]=0 \tag{27.48}$$

$$\eta_t^{\pi}-\log\pi_t^{\mathrm{obj}}+\rho^{\pi^{\mathrm{bar}}}\log\pi_{t-1}^{\mathrm{obj}}+\log cadlr^{\pi^{\mathrm{obj}}}\left(1-\rho^{\pi^{\mathrm{bar}}}\right)=0 \tag{27.49}$$

$$-C_t-I_t-T_t+Y_t-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}}K_{t-1}\left(-1+e^{\psi(-1+z_t)}\right)=0 \tag{27.50}$$

$$-\alpha_{\mathrm{dlr}}r^{\pi}+\eta_t^{\mathrm{R}}-\log\left({R_{\mathrm{ss}}}^{-1}R_t\right)+r^{\Delta^{\pi}}\left(-\log\left({\pi_{\mathrm{ss}}}^{-1}\pi_{t-1}\right)+\log\left({\pi_{\mathrm{ss}}}^{-1}\pi_t\right)\right)+r^{\Delta^{\mathrm{y}}}\left(-\log\left({Y_{\mathrm{ss}}}^{-1}Y_{t-1}\right)+\log\left({Y_{\mathrm{ss}}}^{-1}Y_t\right)+\log\left({Y_{\mathrm{ss}}^{\mathrm{f}}}^{-1}Y_{t-1}^{\mathrm{f}}\right)-\log\left({Y_{\mathrm{ss}}^{\mathrm{f}}}^{-1}Y_t^{\mathrm{f}}\right)\right)+\rho\log\left({R_{\mathrm{ss}}}^{-1}R_{t-1}\right)+(1-\rho)\left(\log\right. \tag{27.51}$$

$$-C_t^{\mathrm{f}}-I_t^{\mathrm{f}}+\Pi_t^{\mathrm{ws}^{\mathrm{f}}}-T_t^{\mathrm{f}}+Y_t^{\mathrm{f}}+L_t^{\mathrm{s}^{\mathrm{f}}}W_t^{\mathrm{disutil}^{\mathrm{f}}}-L_t^{\mathrm{f}}W_t^{\mathrm{f}}-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}K_{t-1}^{\mathrm{f}}\left(-1+e^{\psi\left(-1+z_t^{\mathrm{f}}\right)}\right)=0 \tag{27.52}$$

$$\epsilon_t^{\mathrm{b}}\left(K_{t-1}r_t^{\mathrm{k}}-r_{\mathrm{ss}}^{\mathrm{k}}K_{t-1}e^{\psi(-1+z_t)}\right)\left(C_t-hC_{t-1}\right)^{-\sigma^{\mathrm{c}}}=0 \tag{27.53}$$

$$\epsilon_t^{\mathrm{b}}\left(K_{t-1}^{\mathrm{f}}r_t^{\mathrm{k}^{\mathrm{f}}}-r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}K_{t-1}^{\mathrm{f}}e^{\psi\left(-1+z_t^{\mathrm{f}}\right)}\right)\left(C_t^{\mathrm{f}}-hC_{t-1}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}}=0 \tag{27.54}$$

28 Steady state relationships (after reduction)

$$-q_{\mathrm{ss}}+\beta\left(q_{\mathrm{ss}}\left(1-\tau\right)+\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(r_{\mathrm{ss}}^{\mathrm{k}}z_{\mathrm{ss}}-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}}\left(-1+e^{\psi(-1+z_{\mathrm{ss}})}\right)\right)\left(C_{\mathrm{ss}}-hC_{\mathrm{ss}}\right)^{-\sigma^{\mathrm{c}}}\right)=0 \tag{28.1}$$

$$-q_{\mathrm{ss}}^{\mathrm{f}}+\beta\left(q_{\mathrm{ss}}^{\mathrm{f}}\left(1-\tau\right)+\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}z_{\mathrm{ss}}^{\mathrm{f}}-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}\left(-1+e^{\psi\left(-1+z_{\mathrm{ss}}^{\mathrm{f}}\right)}\right)\right)\left(C_{\mathrm{ss}}^{\mathrm{f}}-hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}}\right)=0 \tag{28.2}$$

$$-r_{\mathrm{ss}}^{\mathrm{k}}+\alpha\epsilon_{\mathrm{ss}}^{\mathrm{a}}mc_{\mathrm{ss}}{L_{\mathrm{ss}}}^{1-\alpha}\left(z_{\mathrm{ss}}K_{\mathrm{ss}}\right)^{-1+\alpha}=0 \tag{28.3}$$

$$-r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}+\alpha\epsilon_{\mathrm{ss}}^{\mathrm{a}}mc_{\mathrm{ss}}^{\mathrm{f}}{L_{\mathrm{ss}}^{\mathrm{f}}}^{1-\alpha}\left(z_{\mathrm{ss}}^{\mathrm{f}}K_{\mathrm{ss}}^{\mathrm{f}}\right)^{-1+\alpha}=0 \tag{28.4}$$

$$-G_{\mathrm{ss}}+T_{\mathrm{ss}}=0 \tag{28.5}$$

$$-G_{\mathrm{ss}}+G^{\mathrm{bar}}\epsilon_{\mathrm{ss}}^{\mathrm{G}}=0 \tag{28.6}$$

$$-G_{\mathrm{ss}}^{\mathrm{f}}+T_{\mathrm{ss}}^{\mathrm{f}}=0 \tag{28.7}$$

$$-G_{\mathrm{ss}}^{\mathrm{f}}+G^{\mathrm{bar}}\epsilon_{\mathrm{ss}}^{\mathrm{G}}=0 \tag{28.8}$$

$$-L_{\mathrm{ss}}+\nu_{\mathrm{ss}}^{\mathrm{w}^{-1}}L_{\mathrm{ss}}^{\mathrm{s}}=0 \tag{28.9}$$

$$-L_{\mathrm{ss}}^{\mathrm{s}^{\mathrm{f}}}+L_{\mathrm{ss}}^{\mathrm{f}}\left(W_{\mathrm{ss}}^{\mathrm{i}^{\mathrm{f}}}{W_{\mathrm{ss}}^{\mathrm{f}}}^{-1}\right)^{\lambda^{\mathrm{w}^{-1}}(-1-\lambda^{\mathrm{w}})}=0 \tag{28.10}$$

$$L_{\mathrm{ss}}^{\mathrm{s^f}} - L_{\mathrm{ss}}^{\mathrm{f}} = 0 \tag{28.11}$$

$$L_{\mathrm{ss}}^{\mathrm{s^f}} + \lambda^{\mathrm{w}-1} L_{\mathrm{ss}}^{\mathrm{f}} {W_{\mathrm{ss}}^{\mathrm{f}}}^{-1} \left(-1-\lambda^{\mathrm{w}}\right) \left(-W_{\mathrm{ss}}^{\mathrm{disutil^f}} + W_{\mathrm{ss}}^{\mathrm{i^f}}\right) \left(W_{\mathrm{ss}}^{\mathrm{i^f}} {W_{\mathrm{ss}}^{\mathrm{f}}}^{-1}\right)^{-1+\lambda^{\mathrm{w}-1}(-1-\lambda^{\mathrm{w}})} = 0 \tag{28.12}$$

$$\Pi_{\mathrm{ss}}^{\mathrm{ws^f}} - L_{\mathrm{ss}}^{\mathrm{s^f}} \left(-W_{\mathrm{ss}}^{\mathrm{disutil^f}} + W_{\mathrm{ss}}^{\mathrm{i^f}}\right) = 0 \tag{28.13}$$

$$\Pi_{\mathrm{ss}}^{\mathrm{ps^f}} - Y_{\mathrm{ss}}^{\mathrm{f}} \left(-mc_{\mathrm{ss}}^{\mathrm{f}} + P_{\mathrm{ss}}^{\mathrm{j^f}}\right) {P_{\mathrm{ss}}^{\mathrm{j^f}}}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \tag{28.14}$$

$$-Q_{\mathrm{ss}} + {\epsilon_{\mathrm{ss}}^{\mathrm{b}}}^{-1} q_{\mathrm{ss}} (C_{\mathrm{ss}} - hC_{\mathrm{ss}})^{\sigma^{\mathrm{c}}} = 0 \tag{28.15}$$

$$-Q_{\mathrm{ss}}^{\mathrm{f}} + {\epsilon_{\mathrm{ss}}^{\mathrm{b}}}^{-1} q_{\mathrm{ss}}^{\mathrm{f}} \left(C_{\mathrm{ss}}^{\mathrm{f}} - hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{\sigma^{\mathrm{c}}} = 0 \tag{28.16}$$

$$-W_{\mathrm{ss}} + \epsilon_{\mathrm{ss}}^{\mathrm{a}} mc_{\mathrm{ss}} (1-\alpha) {L_{\mathrm{ss}}}^{-\alpha} (z_{\mathrm{ss}} K_{\mathrm{ss}})^{\alpha} = 0 \tag{28.17}$$

$$-W_{\mathrm{ss}}^{\mathrm{f}} + \epsilon_{\mathrm{ss}}^{\mathrm{a}} mc_{\mathrm{ss}}^{\mathrm{f}} (1-\alpha) {L_{\mathrm{ss}}^{\mathrm{f}}}^{-\alpha} \left(z_{\mathrm{ss}}^{\mathrm{f}} K_{\mathrm{ss}}^{\mathrm{f}}\right)^{\alpha} = 0 \tag{28.18}$$

$$Y_{\mathrm{ss}}^{\mathrm{s}} - \nu_{\mathrm{ss}}^{\mathrm{p}} Y_{\mathrm{ss}} = 0 \tag{28.19}$$

$$-Y_{\mathrm{ss}}^{\mathrm{f}} + Y_{\mathrm{ss}}^{\mathrm{s^f}} = 0 \tag{28.20}$$

$$-Y_{\mathrm{ss}}^{\mathrm{s^f}} + Y_{\mathrm{ss}}^{\mathrm{f}} {P_{\mathrm{ss}}^{\mathrm{j^f}}}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \tag{28.21}$$

$$\beta \epsilon_{\mathrm{ss}}^{\mathrm{b}} \left(C_{\mathrm{ss}}^{\mathrm{f}} - hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}} - \epsilon_{\mathrm{ss}}^{\mathrm{b}} {R_{\mathrm{ss}}^{\mathrm{f}}}^{-1} \left(C_{\mathrm{ss}}^{\mathrm{f}} - hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}} = 0 \tag{28.22}$$

$$-\epsilon_{\mathrm{ss}}^{\mathrm{b}} {R_{\mathrm{ss}}}^{-1} (C_{\mathrm{ss}} - hC_{\mathrm{ss}})^{-\sigma^{\mathrm{c}}} + \beta \epsilon_{\mathrm{ss}}^{\mathrm{b}} {\pi_{\mathrm{ss}}}^{-1} (C_{\mathrm{ss}} - hC_{\mathrm{ss}})^{-\sigma^{\mathrm{c}}} = 0 \tag{28.23}$$

$$Y_{\mathrm{ss}}^{\mathrm{f}} {P_{\mathrm{ss}}^{\mathrm{j^f}}}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} - \lambda^{\mathrm{p}-1} Y_{\mathrm{ss}}^{\mathrm{f}} (1+\lambda^{\mathrm{p}}) \left(-mc_{\mathrm{ss}}^{\mathrm{f}} + P_{\mathrm{ss}}^{\mathrm{j^f}}\right) {P_{\mathrm{ss}}^{\mathrm{j^f}}}^{-1-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})} = 0 \tag{28.24}$$

$$\epsilon_{\mathrm{ss}}^{\mathrm{b}} W_{\mathrm{ss}}^{\mathrm{disutil^f}} \left(C_{\mathrm{ss}}^{\mathrm{f}} - hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}} - \omega \epsilon_{\mathrm{ss}}^{\mathrm{b}} \epsilon_{\mathrm{ss}}^{\mathrm{L}} {L_{\mathrm{ss}}^{\mathrm{s^f}}}^{\sigma^{\mathrm{l}}} = 0 \tag{28.25}$$

$$-1 + \xi^{\mathrm{p}} \left({\pi_{\mathrm{ss}}}^{-1} {\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}} + (1-\xi^{\mathrm{p}}) {\pi_{\mathrm{ss}}^{\star}}^{-\lambda^{\mathrm{p}-1}} = 0 \tag{28.26}$$

$$-1+\left(1-\xi^{\mathrm{w}}\right)\left(w_{\mathrm{ss}}^{\star}{W_{\mathrm{ss}}}^{-1}\right)^{-\lambda^{\mathrm{w}-1}}+\xi^{\mathrm{w}}1^{-\lambda^{\mathrm{w}-1}}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}}=0 \tag{28.27}$$

$$-\Phi-Y_{\mathrm{ss}}^{\mathrm{s}}+\epsilon_{\mathrm{ss}}^{\mathrm{a}}{L_{\mathrm{ss}}}^{1-\alpha}(z_{\mathrm{ss}}K_{\mathrm{ss}})^{\alpha}=0 \tag{28.28}$$

$$-\Phi-Y_{\mathrm{ss}}^{\mathrm{f}}{P_{\mathrm{ss}}^{\mathrm{j}^{\mathrm{f}}}}^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})}+\epsilon_{\mathrm{ss}}^{\mathrm{a}}{L_{\mathrm{ss}}^{\mathrm{f}}}^{1-\alpha}\left(z_{\mathrm{ss}}^{\mathrm{f}}K_{\mathrm{ss}}^{\mathrm{f}}\right)^{\alpha}=0 \tag{28.29}$$

$$-\log\epsilon_{\mathrm{ss}}^{\mathrm{b}}+\rho^{\mathrm{b}}\log\epsilon_{\mathrm{ss}}^{\mathrm{b}}=0 \tag{28.30}$$

$$-\log\epsilon_{\mathrm{ss}}^{\mathrm{L}}+\rho^{\mathrm{L}}\log\epsilon_{\mathrm{ss}}^{\mathrm{L}}=0 \tag{28.31}$$

$$-\log\epsilon_{\mathrm{ss}}^{\mathrm{I}}+\rho^{\mathrm{I}}\log\epsilon_{\mathrm{ss}}^{\mathrm{I}}=0 \tag{28.32}$$

$$-f_{\mathrm{ss}}^{1}+f_{\mathrm{ss}}^{2}=0 \tag{28.33}$$

$$-\log\epsilon_{\mathrm{ss}}^{\mathrm{a}}+\rho^{\mathrm{a}}\log\epsilon_{\mathrm{ss}}^{\mathrm{a}}=0 \tag{28.34}$$

$$-g_{\mathrm{ss}}^{1}+g_{\mathrm{ss}}^{2}\left(1+\lambda^{\mathrm{p}}\right)=0 \tag{28.35}$$

$$-\log\epsilon_{\mathrm{ss}}^{\mathrm{G}}+\rho^{\mathrm{G}}\log\epsilon_{\mathrm{ss}}^{\mathrm{G}}=0 \tag{28.36}$$

$$-f_{\mathrm{ss}}^{1}+\beta\xi^{\mathrm{w}}f_{\mathrm{ss}}^{1}1^{\lambda^{\mathrm{w}-1}}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}}+\epsilon_{\mathrm{ss}}^{\mathrm{b}}w_{\mathrm{ss}}^{\star}L_{\mathrm{ss}}\left(1+\lambda^{\mathrm{w}}\right)^{-1}\left(C_{\mathrm{ss}}-hC_{\mathrm{ss}}\right)^{-\sigma^{\mathrm{c}}}\left(w_{\mathrm{ss}}^{\star}{W_{\mathrm{ss}}}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}=0 \tag{28.37}$$

$$-f_{\mathrm{ss}}^{2}+\omega\epsilon_{\mathrm{ss}}^{\mathrm{b}}\epsilon_{\mathrm{ss}}^{\mathrm{L}}\left(L_{\mathrm{ss}}\left(w_{\mathrm{ss}}^{\star}{W_{\mathrm{ss}}}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}\right)^{1+\sigma^{\mathrm{l}}}+\beta\xi^{\mathrm{w}}f_{\mathrm{ss}}^{2}1^{\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})\left(1+\sigma^{\mathrm{l}}\right)}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})\left(1+\sigma^{\mathrm{l}}\right)}=0 \tag{28.38}$$

$$-g_{\mathrm{ss}}^{1}+\beta\xi^{\mathrm{p}}g_{\mathrm{ss}}^{1}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}}+\epsilon_{\mathrm{ss}}^{\mathrm{b}}\pi_{\mathrm{ss}}^{\star}Y_{\mathrm{ss}}(C_{\mathrm{ss}}-hC_{\mathrm{ss}})^{-\sigma^{\mathrm{c}}}=0 \tag{28.39}$$

$$-g_{\mathrm{ss}}^{2}+\beta\xi^{\mathrm{p}}g_{\mathrm{ss}}^{2}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}-1}(1+\lambda^{\mathrm{p}})}+\epsilon_{\mathrm{ss}}^{\mathrm{b}}mc_{\mathrm{ss}}Y_{\mathrm{ss}}(C_{\mathrm{ss}}-hC_{\mathrm{ss}})^{-\sigma^{\mathrm{c}}}=0 \tag{28.40}$$

$$-\nu_{\mathrm{ss}}^{\mathrm{w}}+\left(1-\xi^{\mathrm{w}}\right)\left(w_{\mathrm{ss}}^{\star}{W_{\mathrm{ss}}}^{-1}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}+\xi^{\mathrm{w}}\nu_{\mathrm{ss}}^{\mathrm{w}}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{w}}}\right)^{-\lambda^{\mathrm{w}-1}(1+\lambda^{\mathrm{w}})}=0 \tag{28.41}$$

$$-\nu_{\mathrm{ss}}^{\mathrm{p}}+\left(1-\xi^{\mathrm{p}}\right)\pi_{\mathrm{ss}}^{\star\ -\lambda^{\mathrm{p}\,-1}(1+\lambda^{\mathrm{p}})}+\xi^{\mathrm{p}}\nu_{\mathrm{ss}}^{\mathrm{p}}\left({\pi_{\mathrm{ss}}}^{-1}{\pi_{\mathrm{ss}}}^{\gamma^{\mathrm{p}}}\right)^{-\lambda^{\mathrm{p}\,-1}(1+\lambda^{\mathrm{p}})}=0 \tag{28.42}$$

$$-K_{\mathrm{ss}}+I_{\mathrm{ss}}\left(1-0.5\varphi\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)^{2}\right)+K_{\mathrm{ss}}\left(1-\tau\right)=0 \tag{28.43}$$

$$-K_{\mathrm{ss}}^{\mathrm{f}}+I_{\mathrm{ss}}^{\mathrm{f}}\left(1-0.5\varphi\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)^{2}\right)+K_{\mathrm{ss}}^{\mathrm{f}}\left(1-\tau\right)=0 \tag{28.44}$$

$$U_{\mathrm{ss}}-\beta U_{\mathrm{ss}}-\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(\left(1-\sigma^{\mathrm{c}}\right)^{-1}\left(C_{\mathrm{ss}}-hC_{\mathrm{ss}}\right)^{1-\sigma^{\mathrm{c}}}-\omega\epsilon_{\mathrm{ss}}^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1}{L_{\mathrm{ss}}^{\mathrm{s}}}^{1+\sigma^{\mathrm{l}}}\right)=0 \tag{28.45}$$

$$U_{\mathrm{ss}}^{\mathrm{f}}-\beta U_{\mathrm{ss}}^{\mathrm{f}}-\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(\left(1-\sigma^{\mathrm{c}}\right)^{-1}\left(C_{\mathrm{ss}}^{\mathrm{f}}-hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{1-\sigma^{\mathrm{c}}}-\omega\epsilon_{\mathrm{ss}}^{\mathrm{L}}\left(1+\sigma^{\mathrm{l}}\right)^{-1}{L_{\mathrm{ss}}^{\mathrm{s}^{\mathrm{f}}}}^{1+\sigma^{\mathrm{l}}}\right)=0 \tag{28.46}$$

$$-\epsilon_{\mathrm{ss}}^{\mathrm{b}}(C_{\mathrm{ss}}-hC_{\mathrm{ss}})^{-\sigma^{\mathrm{c}}}+q_{\mathrm{ss}}\left(1-0.5\varphi\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)^{2}-\varphi\epsilon_{\mathrm{ss}}^{\mathrm{I}}\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)\right)+\beta\varphi\epsilon_{\mathrm{ss}}^{\mathrm{I}}q_{\mathrm{ss}}\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)=0 \tag{28.47}$$

$$-\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(C_{\mathrm{ss}}^{\mathrm{f}}-hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}}+q_{\mathrm{ss}}^{\mathrm{f}}\left(1-0.5\varphi\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)^{2}-\varphi\epsilon_{\mathrm{ss}}^{\mathrm{I}}\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)\right)+\beta\varphi\epsilon_{\mathrm{ss}}^{\mathrm{I}}q_{\mathrm{ss}}^{\mathrm{f}}\left(-1+\epsilon_{\mathrm{ss}}^{\mathrm{I}}\right)=0 \tag{28.48}$$

$$-\log\pi_{\mathrm{ss}}^{\mathrm{obj}}+\rho^{\pi^{\mathrm{bar}}}\log\pi_{\mathrm{ss}}^{\mathrm{obj}}+\log adbr^{\pi^{\mathrm{obj}}}\left(1-\rho^{\pi^{\mathrm{bar}}}\right)=0 \tag{28.49}$$

$$-C_{\mathrm{ss}}-I_{\mathrm{ss}}-T_{\mathrm{ss}}+Y_{\mathrm{ss}}-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}}K_{\mathrm{ss}}\left(-1+e^{\psi(-1+z_{\mathrm{ss}})}\right)=0 \tag{28.50}$$

$$-adbr^{\pi}+\left(1-\rho\right)\left(\log\pi_{\mathrm{ss}}^{\mathrm{obj}}-r^{\pi}\log\pi_{\mathrm{ss}}^{\mathrm{obj}}\right)=0 \tag{28.51}$$

$$-C_{\mathrm{ss}}^{\mathrm{f}}-I_{\mathrm{ss}}^{\mathrm{f}}+\Pi_{\mathrm{ss}}^{\mathrm{ws}^{\mathrm{f}}}-T_{\mathrm{ss}}^{\mathrm{f}}+Y_{\mathrm{ss}}^{\mathrm{f}}+L_{\mathrm{ss}}^{\mathrm{s}^{\mathrm{f}}}W_{\mathrm{ss}}^{\mathrm{disutil}^{\mathrm{f}}}-L_{\mathrm{ss}}^{\mathrm{f}}W_{\mathrm{ss}}^{\mathrm{f}}-\psi^{-1}r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}K_{\mathrm{ss}}^{\mathrm{f}}\left(-1+e^{\psi\left(-1+z_{\mathrm{ss}}^{\mathrm{f}}\right)}\right)=0 \tag{28.52}$$

$$\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(r_{\mathrm{ss}}^{\mathrm{k}}K_{\mathrm{ss}}-r_{\mathrm{ss}}^{\mathrm{k}}K_{\mathrm{ss}}e^{\psi(-1+z_{\mathrm{ss}})}\right)\left(C_{\mathrm{ss}}-hC_{\mathrm{ss}}\right)^{-\sigma^{\mathrm{c}}}=0 \tag{28.53}$$

$$\epsilon_{\mathrm{ss}}^{\mathrm{b}}\left(r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}K_{\mathrm{ss}}^{\mathrm{f}}-r_{\mathrm{ss}}^{\mathrm{k}^{\mathrm{f}}}K_{\mathrm{ss}}^{\mathrm{f}}e^{\psi\left(-1+z_{\mathrm{ss}}^{\mathrm{f}}\right)}\right)\left(C_{\mathrm{ss}}^{\mathrm{f}}-hC_{\mathrm{ss}}^{\mathrm{f}}\right)^{-\sigma^{\mathrm{c}}}=0 \tag{28.54}$$

29 Calibrating equations

$$-1.408 + {Y_{\mathrm{ss}}^{\mathrm{s}}}^{-1} \left(\Phi + Y_{\mathrm{ss}}^{\mathrm{s}}\right) = 0 \tag{29.1}$$

$$-1 + \pi_{\mathrm{ss}}^{\mathrm{obj}} = 0 \tag{29.2}$$

$$-0.6 + C_{\mathrm{ss}}^{\mathrm{f}} {Y_{\mathrm{ss}}^{\mathrm{f}}}^{-1} = 0 \tag{29.3}$$

$$-0.18 + G_{\mathrm{ss}} {Y_{\mathrm{ss}}}^{-1} = 0 \tag{29.4}$$

$$\pi_{\mathrm{ss}} - \pi_{\mathrm{ss}}^{\mathrm{obj}} = 0 \tag{29.5}$$

30 Parameter settings

$$\alpha = 0.3 \tag{30.1}$$

$$\beta = 0.99 \tag{30.2}$$

$$\gamma^{\mathrm{w}} = 0.763 \tag{30.3}$$

$$\gamma^{\mathrm{p}} = 0.469 \tag{30.4}$$

$$h = 0.573 \tag{30.5}$$

$$\lambda^{\mathrm{w}} = 0.5 \tag{30.6}$$

$$\omega = 1 \tag{30.7}$$

$$\psi = 0.169 \tag{30.8}$$

$$r^{\pi} = 1.684 \tag{30.9}$$

$$r^{\mathrm{Y}} = 0.099 \tag{30.10}$$

$$r^{\Delta^{\pi}} = 0.14 \tag{30.11}$$

$$r^{\Delta^{\mathrm{y}}} = 0.159 \tag{30.12}$$

$$\rho^{\mathrm{b}} = 0.855 \tag{30.13}$$

$$\rho^{\mathrm{L}} = 0.889 \tag{30.14}$$

$$\rho^{\mathrm{I}} = 0.927 \tag{30.15}$$

$$\rho^{\mathrm{a}} = 0.823 \tag{30.16}$$

$$\rho^{\mathrm{G}} = 0.949 \tag{30.17}$$

$$\rho = 0.961 \tag{30.18}$$

$$\rho^{\pi^{\mathrm{bar}}} = 0.924 \tag{30.19}$$

$$\sigma^{\mathrm{c}} = 1.353 \tag{30.20}$$

$$\sigma^{\mathrm{l}} = 2.4 \tag{30.21}$$

$$\tau = 0.025 \tag{30.22}$$

$$\varphi = 6.771 \tag{30.23}$$

$$\xi^{\mathrm{w}} = 0.737 \tag{30.24}$$

$$\xi^{\mathrm{p}} = 0.908 \tag{30.25}$$

31 Statistics of the model

31.1 Moments

	Steady-state value	Std. dev.	Variance	Loglinear
ϵ^{b}	1	0.4207	0.177	Y
ϵ^{L}	1	4.4929	20.1864	Y
ϵ^{I}	1	0.1103	0.0122	Y
ϵ^{a}	1	0.7338	0.5384	Y
ϵ^{G}	1	0.4236	0.1794	Y
f^1	8.7708	0.8265	0.6831	Y
f^2	8.7708	0.8314	0.6913	Y
g^1	48.8253	1.8874	3.5624	Y
g^2	35.7045	1.8874	3.5622	Y
mc	0.7313	0.8206	0.6733	Y
mc^{f}	0.7313	0	0	Y
ν^{w}	1	0	0	Y
ν^{p}	1	0	0	Y
π	1	0.1145	0.0131	Y
$\pi^\star$	1	0.7093	0.503	Y
π^{obj}	1	0.022	5e-04	Y
q	2.4577	0.3662	0.1341	Y
q^{f}	2.4577	0.4179	0.1746	Y
r^{k}	0.0351	0.152	0.0231	Y
$r^{\mathrm{k}^{\mathrm{f}}}$	0.0351	0.1934	0.0374	Y
$w^\star$	1.1227	0.6559	0.4302	Y
z	1	0.8992	0.8086	Y
z^{f}	1	1.1442	1.3093	Y
C	1.2049	0.7154	0.5118	Y
C^{f}	1.2049	1.4816	2.1951	Y
G	0.3615	0.4236	0.1794	Y
G^{f}	0.3615	0.4236	0.1794	Y
I	0.4418	1.8279	3.3412	Y
I^{f}	0.4418	2.6127	6.8262	Y
K	17.6712	0.2275	0.0518	Y
K^{f}	17.6712	0.2981	0.0888	Y
L	1.2891	0.9894	0.9788	Y
L^{s}	1.2891	0.9894	0.9788	Y
$L^{\mathrm{s}^{\mathrm{f}}}$	1.2891	1.1104	1.233	Y
L^{f}	1.2891	1.1104	1.233	Y
$P^{\mathrm{j}^{\mathrm{f}}}$	1	0	0	Y
$\Pi^{\mathrm{ws}^{\mathrm{f}}}$	0.4824	1.1952	1.4285	Y
$\Pi^{\mathrm{ps}^{\mathrm{f}}}$	0.5396	1.6828	2.8319	Y
Q	1	0.9374	0.8786	Y
Q^{f}	1	2.7021	7.3013	Y
R	1.0101	0.2153	0.0464	Y
R^{f}	1.0101	1.1384	1.2959	Y
T	0.3615	0.4236	0.1794	Y
T^{f}	0.3615	0.4236	0.1794	Y
U	-427.937	0.0694	0.0048	Y
U^{f}	-427.937	0.0685	0.0047	Y
W	1.1227	0.3847	0.148	Y
$W^{\mathrm{disutil}^{\mathrm{f}}}$	0.7485	1.0047	1.0094	Y
$W^{\mathrm{i}^{\mathrm{f}}}$	1.1227	1.0047	1.0094	Y
W^{f}	1.1227	1.0047	1.0094	Y
Y	2.0081	0.9158	0.8387	Y
Y^{s}	2.0081	0.9158	0.8387	Y
Y^{f}	2.0081	1.6828	2.8319	Y
$Y^{\mathrm{s}^{\mathrm{f}}}$	2.0081	1.6828	2.8319	Y

31.2 Correlation matrix

	ϵ^{b}	ϵ^{L}	ϵ^{I}	ϵ^{a}	ϵ^{G}	f^1	f^2	g^1	g^2	mc	mc^{f}	ν^{w}	ν
ϵ^{b}	1	0	0	0	0	0.1385	0.1377	0.1	0.1	0.0234	0	0	0
ϵ^{L}	0	1	0	0	0	0.0322	0.032	0.2679	0.2679	0.1233	0	0	0
ϵ^{I}	0	0	1	0	0	-0.0388	-0.0385	-0.029	-0.029	-0.001	0	0	0
ϵ^{a}	0	0	0	1	0	-0.803	-0.7983	-0.3195	-0.3195	-0.9392	0	0	0
ϵ^{G}	0	0	0	0	1	0.088	0.0875	0.0496	0.0496	0.0076	0	0	0
f^1	0.1385	0.0322	-0.0388	-0.803	0.088	1	0.9959	0.1768	0.1768	0.8682	0	0	0
f^2	0.1377	0.032	-0.0385	-0.7983	0.0875	0.9959	1	0.1757	0.1757	0.8629	0	0	0
g^1	0.1	0.2679	-0.029	-0.3195	0.0496	0.1768	0.1757	1	1	0.4829	0	0	0
g^2	0.1	0.2679	-0.029	-0.3195	0.0496	0.1768	0.1757	1	1	0.4829	0	0	0
mc	0.0234	0.1233	-0.001	-0.9392	0.0076	0.8682	0.8629	0.4829	0.4829	1	0	0	0
mc^{f}	0	0	0	0	0	0	0	0	0	0	0	0	0
ν^{w}	Inf	Inf	Inf	-Inf	-Inf	Inf	Inf	Inf	Inf	Inf	0	0	0
ν^{p}	Inf	-Inf	-Inf	Inf	Inf	-Inf	-Inf	-Inf	-Inf	-Inf	0	0	0
π	0.0483	0.283	-0.011	-0.4354	0.0147	0.405	0.4026	0.8971	0.8971	0.6528	0	0	0
$\pi^{\star}$	0.056	0.3192	-0.0123	-0.4865	0.0158	0.3178	0.3158	0.9723	0.9721	0.647	0	0	0
π^{obj}	0	0	0	0	0	-0.0118	-0.0117	0.0667	0.0667	0.0048	0	0	0
q	0.1222	0.7544	-0.0017	-0.3744	0.0768	0.4535	0.4508	-0.0877	-0.0877	0.399	0	0	0
q^{f}	0.1459	0.8703	-0.0082	-0.4123	0.0753	0.3844	0.3821	0.3755	0.3755	0.5041	0	0	0
r^{k}	0.0605	-0.2846	-0.0145	-0.6424	0.0504	0.621	0.6172	0.6773	0.6773	0.7117	0	0	0
$r^{\mathrm{k^f}}$	-0.0375	-0.7517	-0.0091	0.5539	0.0204	-0.4657	-0.4629	-0.3616	-0.3616	-0.641	0	0	0
$w^{\star}$	0.1032	0.6391	-0.0075	-0.1008	0.0204	0.12	0.1179	0.8724	0.8724	0.3468	0	0	0
z	0.0605	-0.2846	-0.0145	-0.6424	0.0504	0.621	0.6172	0.6773	0.6773	0.7117	0	0	0
z^{f}	-0.0375	-0.7517	-0.0091	0.5539	0.0204	-0.4657	-0.4629	-0.3616	-0.3616	-0.641	0	0	0
C	0.1911	-0.5798	0.0119	0.3995	-0.0318	-0.373	-0.3708	0.2451	0.2451	-0.3887	0	0	0
C^{f}	0.0224	-0.7576	0.0057	0.6075	-0.0297	-0.5097	-0.5067	-0.3909	-0.3909	-0.6679	0	0	0
G	0	0	0	0	1	0.088	0.0875	0.0496	0.0496	0.0076	0	0	0
G^{f}	0	0	0	0	1	0.088	0.0875	0.0496	0.0496	0.0076	0	0	0
I	-0.044	-0.3	-0.0298	0.1771	-0.0133	0.0313	0.0311	0.3135	0.3135	-0.1073	0	0	0
I^{f}	-0.0819	-0.5367	-0.0199	0.3543	-0.0209	-0.2949	-0.2931	-0.1984	-0.1985	-0.4831	0	0	0
K	0.0479	0.2901	0.0227	-0.1775	0.0138	0.3581	0.356	-0.002	-0.002	0.2531	0	0	0
K^{f}	0.0523	0.2727	0.0132	-0.1635	0.0109	0.1599	0.1589	0.1781	0.1781	0.1495	0	0	0
L	0.0539	-0.3846	-0.0084	-0.7218	0.0518	0.6058	0.6022	0.5153	0.5153	0.6781	0	0	0
L^{s}	0.0539	-0.3846	-0.0084	-0.7218	0.0518	0.6058	0.6022	0.5153	0.5153	0.6781	0	0	0
$L^{\mathrm{s^f}}$	-0.0287	-0.8541	-0.0068	-0.3018	0.0303	0.2241	0.2228	-0.0999	-0.0999	0.1369	0	0	0
L^{f}	-0.0287	-0.8541	-0.0068	-0.3018	0.0303	0.2241	0.2228	-0.0999	-0.0999	0.1369	0	0	0
$P^{\mathrm{j^f}}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Pi^{\mathrm{ws^f}}$	-0.0241	-0.7414	-0.0057	0.5583	0.0267	-0.4638	-0.461	-0.348	-0.348	-0.6521	0	0	0
$\Pi^{\mathrm{ps^f}}$	-0.0241	-0.7414	-0.0057	0.5583	0.0267	-0.4638	-0.461	-0.348	-0.348	-0.6521	0	0	0
Q	-0.1014	-0.6021	0.0186	0.5021	-0.0178	-0.6609	-0.657	0.1382	0.1382	-0.5088	0	0	0
Q^{f}	-0.1037	-0.6627	0.0057	0.6048	-0.0189	-0.5339	-0.5308	-0.4172	-0.4172	-0.6105	0	0	0
R	0.0943	0.6156	-0.0016	-0.6906	0.0206	0.7595	0.7549	0.3796	0.3796	0.8033	0	0	0
R^{f}	0.0677	0.5957	0.0036	-0.6185	0.0163	0.5386	0.5354	0.4033	0.4033	0.6103	0	0	0
T	0	0	0	0	1	0.088	0.0875	0.0496	0.0496	0.0076	0	0	0
T^{f}	0	0	0	0	1	0.088	0.0875	0.0496	0.0496	0.0076	0	0	0
U	0.3933	0.8153	3e-04	-0.3868	0.0911	0.3854	0.3831	0.3688	0.3688	0.4577	0	0	0
U^{f}	0.3939	0.8014	-1e-04	-0.3886	0.0922	0.3997	0.3973	0.3779	0.3779	0.476	0	0	0
W	0.061	0.424	-6e-04	-0.0284	0.0145	0.3524	0.3498	0.4861	0.4861	0.3674	0	0	0
$W^{\mathrm{disutil^f}}$	0.0031	0.062	8e-04	0.9976	-0.0017	-0.7994	-0.7947	-0.3035	-0.3035	-0.927	0	0	0
$W^{\mathrm{i^f}}$	0.0031	0.062	8e-04	0.9976	-0.0017	-0.7994	-0.7947	-0.3035	-0.3035	-0.927	0	0	0
W^{f}	0.0031	0.062	8e-04	0.9976	-0.0017	-0.7994	-0.7947	-0.3035	-0.3035	-0.927	0	0	0
Y	0.0886	-0.4898	-0.0119	0.0702	0.0778	0.0346	0.0343	0.4621	0.4622	-0.0128	0	0	0
Y^{s}	0.0886	-0.4898	-0.0119	0.0702	0.0778	0.0346	0.0343	0.4621	0.4622	-0.0128	0	0	0
Y^{f}	-0.0241	-0.7414	-0.0057	0.5583	0.0267	-0.4638	-0.461	-0.348	-0.348	-0.6521	0	0	0
$Y^{\mathrm{s^f}}$	-0.0241	-0.7414	-0.0057	0.5583	0.0267	-0.4638	-0.461	-0.348	-0.348	-0.6521	0	0	0

31.3 Autocorrelations

	$t-1$	$t-2$	$t-3$	$t-4$	$t-5$
ϵ^{b}	0.6654	0.3986	0.1908	0.0335	-0.081
ϵ^{L}	0.6859	0.429	0.2235	0.0636	-0.0567
ϵ^{I}	0.7048	0.4578	0.2558	0.0946	-0.03
ϵ^{a}	0.6438	0.3678	0.159	0.0058	-0.1018
ϵ^{G}	0.713	0.4706	0.2705	0.1093	-0.0169
f^1	0.6675	0.4014	0.195	0.0393	-0.0743
f^2	0.6586	0.3958	0.1919	0.0381	-0.0741
g^1	0.7473	0.5206	0.3235	0.1571	0.021
g^2	0.7474	0.5206	0.3235	0.1571	0.0211
mc	0.6822	0.4261	0.2228	0.0649	-0.0539
mc^{f}	NaN	NaN	NaN	NaN	NaN
ν^{w}	NaN	NaN	NaN	NaN	NaN
ν^{p}	NaN	NaN	NaN	NaN	NaN
π	0.8807	0.6745	0.4521	0.2453	0.0675
$\pi^{\star}$	0.7338	0.5023	0.305	0.141	0.0086
π^{obj}	0.7035	0.4558	0.2535	0.0923	-0.032
q	0.6699	0.4077	0.2038	0.0493	-0.0638
q^{f}	0.6225	0.3535	0.1589	0.0192	-0.0783
r^{k}	0.7406	0.5165	0.3259	0.1668	0.0369
$r^{\mathrm{k^f}}$	0.8613	0.6402	0.413	0.209	0.0384
$w^{\star}$	0.7747	0.5678	0.3802	0.2144	0.072
z	0.7406	0.5165	0.3259	0.1668	0.0369
z^{f}	0.8613	0.6402	0.413	0.209	0.0384
C	0.871	0.6373	0.3843	0.1546	-0.0336
C^{f}	0.7933	0.4997	0.2319	0.0218	-0.1283
G	0.713	0.4706	0.2705	0.1093	-0.0169
G^{f}	0.713	0.4706	0.2705	0.1093	-0.0169
I	0.945	0.8182	0.6499	0.4634	0.276
I^{f}	0.9221	0.7637	0.5697	0.3679	0.1763
K	0.9796	0.9208	0.8287	0.7102	0.573
K^{f}	0.9757	0.9066	0.8005	0.6668	0.5154
L	0.7052	0.4567	0.2534	0.0919	-0.0325
L^{s}	0.7052	0.4567	0.2534	0.0919	-0.0325
$L^{\mathrm{s^f}}$	0.7696	0.5284	0.3112	0.1295	-0.0152
L^{f}	0.7696	0.5284	0.3112	0.1295	-0.0152
$P^{\mathrm{j^f}}$	NaN	NaN	NaN	NaN	NaN
$\Pi^{\mathrm{ws^f}}$	0.8404	0.5961	0.355	0.1476	-0.0182
$\Pi^{\mathrm{ps^f}}$	0.8404	0.5961	0.355	0.1476	-0.0182
Q	0.6716	0.395	0.1791	0.0185	-0.0958
Q^{f}	0.4558	0.1749	0.0181	-0.0731	-0.1257
R	0.7709	0.4956	0.2532	0.0622	-0.0789
R^{f}	0.3765	0.0994	-0.0306	-0.0936	-0.1232
T	0.713	0.4706	0.2705	0.1093	-0.0169
T^{f}	0.713	0.4706	0.2705	0.1093	-0.0169
U	0.6354	0.3595	0.1548	0.0068	-0.0961
U^{f}	0.6013	0.3324	0.1441	0.0112	-0.0806
W	0.9502	0.8308	0.6685	0.4852	0.2981
$W^{\mathrm{disutil^f}}$	0.6333	0.3561	0.1496	-3e-04	-0.1046
$W^{\mathrm{i^f}}$	0.6333	0.3561	0.1496	-3e-04	-0.1046
W^{f}	0.6333	0.3561	0.1496	-3e-04	-0.1046
Y	0.9049	0.7264	0.5191	0.3142	0.1286
Y^{s}	0.9049	0.7264	0.5191	0.3142	0.1286
Y^{f}	0.8404	0.5961	0.355	0.1476	-0.0182
$Y^{\mathrm{s^f}}$	0.8404	0.5961	0.355	0.1476	-0.0182

31.4 Variance decomposition

	η^{b}	η^{L}	η^{I}	η^{w}	η^{a}	η^{p}	η^{G}	η^{R}	η^{π}
ϵ^{b}	1	0	0	0	0	0	0	0	0
ϵ^{L}	0	1	0	0	0	0	0	0	0
ϵ^{I}	0	0	1	0	0	0	0	0	0
ϵ^{a}	0	0	0	0	1	0	0	0	0
ϵ^{G}	0	0	0	0	0	0	1	0	0
f^1	0.0204	0.003	0.0018	4e-04	0.6589	0	0.0078	0.307	8e-04
f^2	0.0201	0.0029	0.0018	0.0122	0.6511	0	0.0077	0.3034	8e-04
g^1	0.0101	0.0734	9e-04	0	0.1131	1e-04	0.0025	0.7953	0.0047
g^2	0.0101	0.0734	9e-04	0	0.1131	0	0.0025	0.7953	0.0047
mc	0.0015	0.0369	0	0	0.8838	0	1e-04	0.0775	2e-04
mc^{f}	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
ν^{w}	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
ν^{p}	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
π	0.0034	0.1088	2e-04	0	0.2145	2e-04	3e-04	0.6691	0.0036
$\pi^{\star}$	0.0033	0.1058	2e-04	0	0.2407	4e-04	3e-04	0.6457	0.0035
π^{obj}	0	0	0	0	0	0	0	0	1
q	0.0159	0.5993	1e-04	0	0.149	0	0.006	0.2288	0.001
q^{f}	0.0222	0.7897	1e-04	0	0.1822	0	0.0057	0	0
r^{k}	0.005	0.1087	4e-04	0	0.4632	0	0.0026	0.4189	0.0011
$r^{\mathrm{k}^{\mathrm{f}}}$	0.0022	0.6459	1e-04	0	0.3512	0	5e-04	0	0
$w^{\star}$	0.0112	0.4129	1e-04	3e-04	0.0245	0	4e-04	0.5487	0.0018
z	0.005	0.1087	4e-04	0	0.4632	0	0.0026	0.4189	0.0011
z^{f}	0.0022	0.6459	1e-04	0	0.3512	0	5e-04	0	0
C	0.0462	0.4269	3e-04	0	0.2144	0	0.0013	0.3102	7e-04
C^{f}	0.002	0.605	1e-04	0	0.3919	0	9e-04	0	0
G	0	0	0	0	0	0	1	0	0
G^{f}	0	0	0	0	0	0	1	0	0
I	0.0116	0.4314	0.0032	0	0.1782	0	8e-04	0.3737	0.001
I^{f}	0.0204	0.6815	0.0011	0	0.296	0	0.001	0	0
K	0.0113	0.4397	0.0034	0	0.1643	0	0.001	0.3793	0.0011
K^{f}	0.0206	0.7097	0.0013	0	0.2672	0	0.0012	0	0
L	0.0034	0.2564	2e-04	0	0.5695	0	0.0029	0.1672	4e-04
L^{s}	0.0034	0.2564	2e-04	0	0.5695	0	0.0029	0.1672	4e-04
$L^{\mathrm{s}^{\mathrm{f}}}$	0.0014	0.8413	1e-04	0	0.1561	0	0.0011	0	0
L^{f}	0.0014	0.8413	1e-04	0	0.1561	0	0.0011	0	0
$P^{\mathrm{j}^{\mathrm{f}}}$	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
$\Pi^{\mathrm{ws}^{\mathrm{f}}}$	0.001	0.6362	1e-04	0	0.3618	0	8e-04	0	0
$\Pi^{\mathrm{ps}^{\mathrm{f}}}$	0.001	0.6362	1e-04	0	0.3618	0	8e-04	0	0
Q	0.0104	0.3712	5e-04	0	0.2537	0	3e-04	0.3633	6e-04
Q^{f}	0.0114	0.5554	1e-04	0	0.4325	0	5e-04	0	0
R	0.0108	0.3976	1e-04	0	0.4912	0	4e-04	0.0994	5e-04
R^{f}	0.0048	0.5135	0	0	0.4812	0	5e-04	0	0
T	0	0	0	0	0	0	1	0	0
T^{f}	0	0	0	0	0	0	1	0	0
U	0.155	0.6742	1e-04	0	0.1533	0	0.0083	0.0091	0
U^{f}	0.156	0.6723	1e-04	0	0.1631	0	0.0085	0	0
W	0.0113	0.401	2e-04	1e-04	0.012	0	4e-04	0.5731	0.0018
$W^{\mathrm{disutil}^{\mathrm{f}}}$	0	0.0044	0	0	0.9956	0	0	0	0
$W^{\mathrm{i}^{\mathrm{f}}}$	0	0.0044	0	0	0.9956	0	0	0	0
W^{f}	0	0.0044	0	0	0.9956	0	0	0	0
Y	0.009	0.4081	5e-04	0	0.1125	0	0.0065	0.4624	0.0011
Y^{s}	0.009	0.4081	5e-04	0	0.1125	0	0.0065	0.4624	0.0011
Y^{f}	0.001	0.6362	1e-04	0	0.3618	0	8e-04	0	0
$Y^{\mathrm{s}^{\mathrm{f}}}$	0.001	0.6362	1e-04	0	0.3618	0	8e-04	0	0

32 Impulse response functions

32.1 Shock η^{a}

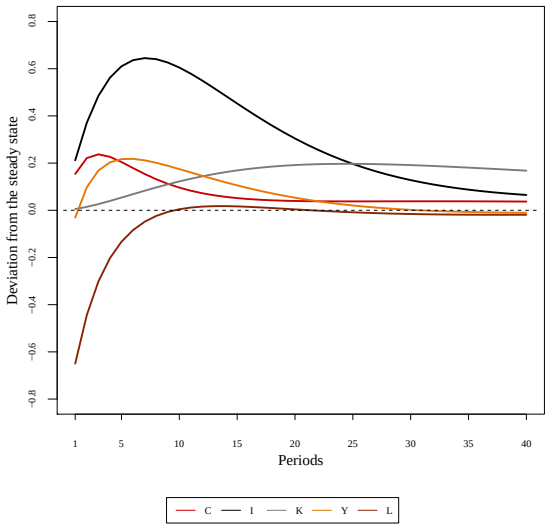

Figure 1: Impulse response function for η^{a} shock

32.2 Shock η^{R}

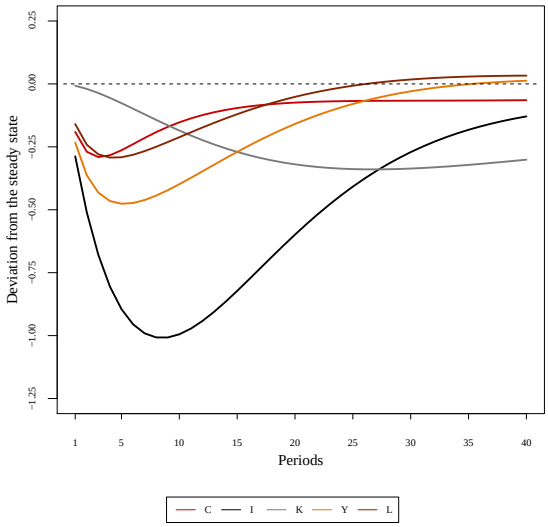

Figure 2: Impulse response function for η^{R} shock