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Model name: `RSW_RP`

1 HIGHREGIME

1.1 Optimisation problem

$$\max_{piH_t, yH_t, iH_t} UH_t = -0.5\left(pitH - pitCB + piH_t\right)^2 + \beta \mathrm{E}_t\left[UH_{t+1}\right] + \beta\left(-\mathrm{E}_t\left[UH_{t+1}\right] + \mathrm{E}_t\left[UL_{t+1}\right]\right)\left(1 - pHss - \tau\left(-pitCB + piH_t\right)^2\right) - 0.5\kappa\theta^{-1} {yH_t}^2 \quad (1.1)$$

s.t. :

$$piH_{t-1} = \log etapi_{t-1} + \kappa yH_{t-1} + \beta piH_t\left(pHss + \tau\left(-pitCB + piH_t\right)^2\right) + \beta\left(-piH_t + piL_t\right)\left(1 - pHss - \tau\left(-pitCB + piH_t\right)^2\right) \quad \left(\lambda_t^{\mathrm{HIGHREGIME}^1}\right) \quad (1.2)$$

$$yH_{t-1} = yH_t - \sigma\left(iH_{t-1} - piH_t\right) + \left(-yH_t + yL_t\right)\left(1 - pHss - \tau\left(-pitCB + piH_t\right)^2\right) + \sigma\left(-piH_t + piL_t\right)\left(1 - pHss - \tau\left(-pitCB + piH_t\right)^2\right) \quad \left(\lambda_t^{\mathrm{HIGHREGIME}^2}\right) \quad (1.3)$$

1.2 First order conditions

$$\beta - \lambda_t^{\mathrm{HIGHREGIME}^{\mathrm{UH}}} - \beta\left(1 - pHss - \tau\left(-pitCB + piH_{t-1}\right)^2\right) = 0 \quad (UH_t) \quad (1.4)$$

$$-pitH + pitCB - piH_t + \lambda_t^{\mathrm{HIGHREGIME}^1}\left(\beta\left(pHss + \tau\left(-pitCB + piH_t\right)^2\right) - \beta\left(1 - pHss - \tau\left(-pitCB + piH_t\right)^2\right) + 2\beta\tau piH_t\left(-pitCB + piH_t\right) - 2\beta\tau\left(-pitCB + piH_t\right)\left(-piH_t + piL_t\right)\right) + \lambda_t^{\mathrm{HIGHRE}} \quad (1.5)$$

$$\lambda_t^{\mathrm{HIGHREGIME}^2}\left(pHss + \tau\left(-pitCB + piH_t\right)^2\right) - \kappa\theta^{-1} yH_t + \mathrm{E}_t\left[\lambda_{t+1}^{\mathrm{HIGHREGIME}^{\mathrm{UH}}}\left(-\lambda_{t+1}^{\mathrm{HIGHREGIME}^2} + \kappa\lambda_{t+1}^{\mathrm{HIGHREGIME}^1}\right)\right] = 0 \quad (yH_t) \quad (1.6)$$

$$-\sigma \mathrm{E}_t\left[\lambda_{t+1}^{\mathrm{HIGHREGIME}^{\mathrm{UH}}} \lambda_{t+1}^{\mathrm{HIGHREGIME}^2}\right] = 0 \quad (iH_t) \quad (1.7)$$

2 LOWREGIME

2.1 Optimisation problem

$$\max_{piL_t, yL_t, iL_t} UL_t = -0.5\left(-pitCB + pitL + piL_t\right)^2 + \beta \mathrm{E}_t\left[UL_{t+1}\right] + \beta\left(\mathrm{E}_t\left[UH_{t+1}\right] - \mathrm{E}_t\left[UL_{t+1}\right]\right)\left(1 - pLss - \tau\left(-pitCB + piL_t\right)^2\right) - 0.5\kappa\theta^{-1} {yL_t}^2 \quad (2.1)$$

s.t. :

$$piL_{t-1} = \log etapi_{t-1} + \kappa yL_{t-1} + \beta piL_t\left(pLss + \tau\left(-pitCB + piL_t\right)^2\right) + \beta\left(piH_t - piL_t\right)\left(1 - pLss - \tau\left(-pitCB + piL_t\right)^2\right) \quad \left(\lambda_t^{\mathrm{LOWREGIME}^1}\right) \quad (2.2)$$

$$yL_{t-1} = yL_t - \sigma\left(iL_{t-1} - piL_t\right) + \left(yH_t - yL_t\right)\left(1 - pLss - \tau\left(-pitCB + piL_t\right)^2\right) + \sigma\left(piH_t - piL_t\right)\left(1 - pLss - \tau\left(-pitCB + piL_t\right)^2\right) \quad \left(\lambda_t^{\mathrm{LOWREGIME}^2}\right) \quad (2.3)$$

2.2 First order conditions

$$\beta - \lambda_t^{\mathrm{LOWREGIME}^{\mathrm{UL}}} - \beta \left(1 - pLss - \tau \left(-pitCB + piL_{t-1}\right)^2\right) = 0 \quad (UL_t) \tag{2.4}$$

$$pitCB - pitL - piL_t + \lambda_t^{\mathrm{LOWREGIME}^1} \left(\beta \left(pLss + \tau \left(-pitCB + piL_t\right)^2\right) - \beta \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right) + 2\beta\tau piL_t \left(-pitCB + piL_t\right) - 2\beta\tau \left(-pitCB + piL_t\right)\left(piH_t - piL_t\right)\right) + \lambda_t^{\mathrm{LOWREGIME}^2} \Bigl(\sigma \tag{2.5}$$

$$\lambda_t^{\mathrm{LOWREGIME}^2} \left(pLss + \tau \left(-pitCB + piL_t\right)^2\right) - \kappa\theta^{-1} yL_t + \mathrm{E}_t \left[\lambda_{t+1}^{\mathrm{LOWREGIME}^{\mathrm{UL}}} \left(-\lambda_{t+1}^{\mathrm{LOWREGIME}^2} + \kappa \lambda_{t+1}^{\mathrm{LOWREGIME}^1}\right)\right] = 0 \quad (yL_t) \tag{2.6}$$

$$-\sigma \mathrm{E}_t \left[\lambda_{t+1}^{\mathrm{LOWREGIME}^{\mathrm{UL}}} \lambda_{t+1}^{\mathrm{LOWREGIME}^2}\right] = 0 \quad (iL_t) \tag{2.7}$$

3 EXOG

3.1 Identities

$$etapi_t = e^{\epsilon_t^\pi + \phi \log etapi_{t-1}} \tag{3.1}$$

4 Equilibrium relationships (after reduction)

$$-etapi_t + e^{\epsilon_t^\pi + \phi \log etapi_{t-1}} = 0 \tag{4.1}$$

$$\lambda_t^{\mathrm{HIGHREGIME}^2} \left(pHss + \tau \left(-pitCB + piH_t\right)^2\right) + \left(\beta - \beta \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right)\right) \mathrm{E}_t \left[-\lambda_{t+1}^{\mathrm{HIGHREGIME}^2} + \kappa \lambda_{t+1}^{\mathrm{HIGHREGIME}^1}\right] - \kappa\theta^{-1} yH_t = 0 \tag{4.2}$$

$$\lambda_t^{\mathrm{LOWREGIME}^2} \left(pLss + \tau \left(-pitCB + piL_t\right)^2\right) + \left(\beta - \beta \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right)\right) \mathrm{E}_t \left[-\lambda_{t+1}^{\mathrm{LOWREGIME}^2} + \kappa \lambda_{t+1}^{\mathrm{LOWREGIME}^1}\right] - \kappa\theta^{-1} yL_t = 0 \tag{4.3}$$

$$-piH_{t-1} + \log etapi_{t-1} + \kappa yH_{t-1} + \beta piH_t \left(pHss + \tau \left(-pitCB + piH_t\right)^2\right) + \beta \left(-piH_t + piL_t\right) \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right) = 0 \tag{4.4}$$

$$-piL_{t-1} + \log etapi_{t-1} + \kappa yL_{t-1} + \beta piL_t \left(pLss + \tau \left(-pitCB + piL_t\right)^2\right) + \beta \left(piH_t - piL_t\right) \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right) = 0 \tag{4.5}$$

$$-yH_{t-1} + yH_t - \sigma \left(iH_{t-1} - piH_t\right) + \left(-yH_t + yL_t\right) \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right) + \sigma \left(-piH_t + piL_t\right) \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right) = 0 \tag{4.6}$$

$$-yL_{t-1} + yL_t - \sigma \left(iL_{t-1} - piL_t\right) + \left(yH_t - yL_t\right) \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right) + \sigma \left(piH_t - piL_t\right) \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right) = 0 \tag{4.7}$$

$$UH_t + 0.5 \left(pitH - pitCB + piH_t\right)^2 - \beta \mathrm{E}_t \left[UH_{t+1}\right] - \beta \left(-\mathrm{E}_t \left[UH_{t+1}\right] + \mathrm{E}_t \left[UL_{t+1}\right]\right) \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right) + 0.5\kappa\theta^{-1} {yH_t}^2 = 0 \tag{4.8}$$

$$UL_t + 0.5 \left(-pitCB + pitL + piL_t\right)^2 - \beta \mathrm{E}_t \left[UL_{t+1}\right] - \beta \left(\mathrm{E}_t \left[UH_{t+1}\right] - \mathrm{E}_t \left[UL_{t+1}\right]\right) \left(1 - pLss - \tau \left(-pitCB + piL_t\right)^2\right) + 0.5\kappa\theta^{-1} {yL_t}^2 = 0 \tag{4.9}$$

$$-pitH + pitCB - piH_t + \lambda_t^{\mathrm{HIGHREGIME}^1} \left(\beta \left(pHss + \tau \left(-pitCB + piH_t\right)^2\right) - \beta \left(1 - pHss - \tau \left(-pitCB + piH_t\right)^2\right) + 2\beta\tau piH_t \left(-pitCB + piH_t\right) - 2\beta\tau \left(-pitCB + piH_t\right)\left(-piH_t + piL_t\right)\right) + \lambda_t^{\mathrm{HIGHRE}} \tag{4.10}$$

$$\mathit{pitCB}-\mathit{pitL}-\mathit{piL}_t+\lambda^{\mathrm{LOWREGIME}^1}_t\left(\beta\left(\mathit{pLss}+\tau\left(-\mathit{pitCB}+\mathit{piL}_t\right)^2\right)-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_t\right)^2\right)+2\beta\tau\mathit{piL}_t\left(-\mathit{pitCB}+\mathit{piL}_t\right)-2\beta\tau\left(-\mathit{pitCB}+\mathit{piL}_t\right)\left(\mathit{piH}_t-\mathit{piL}_t\right)\right)+\lambda^{\mathrm{LOWREGIME}^2}_t\Big(\sigma \tag{4.11}$$

$$-\sigma\left(\beta-\beta\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_t\right)^2\right)\right)\mathrm{E}_t\left[\lambda^{\mathrm{HIGHREGIME}^2}_{t+1}\right]=0 \tag{4.12}$$

$$-\sigma\left(\beta-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_t\right)^2\right)\right)\mathrm{E}_t\left[\lambda^{\mathrm{LOWREGIME}^2}_{t+1}\right]=0 \tag{4.13}$$

5 Steady state relationships (after reduction)

$$-\mathit{etapi}_{\mathrm{ss}}+e^{\phi\log\mathit{etapi}_{\mathrm{ss}}}=0 \tag{5.1}$$

$$\lambda^{\mathrm{HIGHREGIME}^2}_{\mathrm{ss}}\left(\mathit{pHss}+\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)+\left(\beta-\beta\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)\right)\left(-\lambda^{\mathrm{HIGHREGIME}^2}_{\mathrm{ss}}+\kappa\lambda^{\mathrm{HIGHREGIME}^1}_{\mathrm{ss}}\right)-\kappa\theta^{-1}\mathit{yH}_{\mathrm{ss}}=0 \tag{5.2}$$

$$\lambda^{\mathrm{LOWREGIME}^2}_{\mathrm{ss}}\left(\mathit{pLss}+\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)+\left(\beta-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)\right)\left(-\lambda^{\mathrm{LOWREGIME}^2}_{\mathrm{ss}}+\kappa\lambda^{\mathrm{LOWREGIME}^1}_{\mathrm{ss}}\right)-\kappa\theta^{-1}\mathit{yL}_{\mathrm{ss}}=0 \tag{5.3}$$

$$-\mathit{piH}_{\mathrm{ss}}+\log\mathit{etapi}_{\mathrm{ss}}+\kappa\mathit{yH}_{\mathrm{ss}}+\beta\mathit{piH}_{\mathrm{ss}}\left(\mathit{pHss}+\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)+\beta\left(-\mathit{piH}_{\mathrm{ss}}+\mathit{piL}_{\mathrm{ss}}\right)\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)=0 \tag{5.4}$$

$$-\mathit{piL}_{\mathrm{ss}}+\log\mathit{etapi}_{\mathrm{ss}}+\kappa\mathit{yL}_{\mathrm{ss}}+\beta\mathit{piL}_{\mathrm{ss}}\left(\mathit{pLss}+\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)+\beta\left(\mathit{piH}_{\mathrm{ss}}-\mathit{piL}_{\mathrm{ss}}\right)\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)=0 \tag{5.5}$$

$$\left(-\mathit{yH}_{\mathrm{ss}}+\mathit{yL}_{\mathrm{ss}}\right)\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)-\sigma\left(\mathit{iH}_{\mathrm{ss}}-\mathit{piH}_{\mathrm{ss}}\right)+\sigma\left(-\mathit{piH}_{\mathrm{ss}}+\mathit{piL}_{\mathrm{ss}}\right)\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)=0 \tag{5.6}$$

$$\left(\mathit{yH}_{\mathrm{ss}}-\mathit{yL}_{\mathrm{ss}}\right)\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)-\sigma\left(\mathit{iL}_{\mathrm{ss}}-\mathit{piL}_{\mathrm{ss}}\right)+\sigma\left(\mathit{piH}_{\mathrm{ss}}-\mathit{piL}_{\mathrm{ss}}\right)\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)=0 \tag{5.7}$$

$$UH_{\mathrm{ss}}+0.5\left(\mathit{pitH}-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2-\beta UH_{\mathrm{ss}}-\beta\left(-UH_{\mathrm{ss}}+UL_{\mathrm{ss}}\right)\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)+0.5\kappa\theta^{-1}{\mathit{yH}_{\mathrm{ss}}}^2=0 \tag{5.8}$$

$$UL_{\mathrm{ss}}+0.5\left(-\mathit{pitCB}+\mathit{pitL}+\mathit{piL}_{\mathrm{ss}}\right)^2-\beta UL_{\mathrm{ss}}-\beta\left(UH_{\mathrm{ss}}-UL_{\mathrm{ss}}\right)\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)+0.5\kappa\theta^{-1}{\mathit{yL}_{\mathrm{ss}}}^2=0 \tag{5.9}$$

$$-\mathit{pitH}+\mathit{pitCB}-\mathit{piH}_{\mathrm{ss}}-\lambda^{\mathrm{HIGHREGIME}^1}_{\mathrm{ss}}\left(\beta-\beta\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)\right)+\lambda^{\mathrm{HIGHREGIME}^1}_{\mathrm{ss}}\left(\beta\left(\mathit{pHss}+\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)-\beta\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)+2\beta\tau\mathit{piH}_{\mathrm{ss}}\left(-\right.\right. \tag{5.10}$$

$$\mathit{pitCB}-\mathit{pitL}-\mathit{piL}_{\mathrm{ss}}-\lambda^{\mathrm{LOWREGIME}^1}_{\mathrm{ss}}\left(\beta-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)\right)+\lambda^{\mathrm{LOWREGIME}^1}_{\mathrm{ss}}\left(\beta\left(\mathit{pLss}+\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)+2\beta\tau\mathit{piL}_{\mathrm{ss}}\left(-\mathit{pitCB}+\right.\right. \tag{5.11}$$

$$-\sigma\lambda^{\mathrm{HIGHREGIME}^2}_{\mathrm{ss}}\left(\beta-\beta\left(1-\mathit{pHss}-\tau\left(-\mathit{pitCB}+\mathit{piH}_{\mathrm{ss}}\right)^2\right)\right)=0 \tag{5.12}$$

$$-\sigma\lambda^{\mathrm{LOWREGIME}^2}_{\mathrm{ss}}\left(\beta-\beta\left(1-\mathit{pLss}-\tau\left(-\mathit{pitCB}+\mathit{piL}_{\mathrm{ss}}\right)^2\right)\right)=0 \tag{5.13}$$

6 Parameter settings

$$\beta = 0.99 \tag{6.1}$$

$$\kappa = 0.2465 \tag{6.2}$$

$$\phi = 0.95 \tag{6.3}$$

$$pitH = 0 \tag{6.4}$$

$$pitCB = 0 \tag{6.5}$$

$$pitL = 2 \tag{6.6}$$

$$pHss = 0.99 \tag{6.7}$$

$$pLss = 0.99 \tag{6.8}$$

$$\sigma = 1 \tag{6.9}$$

$$\tau = 0.01 \tag{6.10}$$

$$\theta = 6 \tag{6.11}$$

7 Steady-state values

	Steady-state value
$etapi$	1
iH	-0.0149
iL	-1.5222
$\lambda^{\text{HIGHREGIME}^1}$	0.0103
$\lambda^{\text{HIGHREGIME}^2}$	0
$\lambda^{\text{LOWREGIME}^1}$	0.0152
$\lambda^{\text{LOWREGIME}^2}$	0
piH	-2e-04
piL	-1.5036
yH	0.0604
yL	0.0913
UH	-16.4635
UL	-33.0857

8 The solution of the 1st order perturbation

Matrix P

$$\begin{array}{c} \\ etapi_t \\ iH_t \\ iL_t \\ piH_t \\ piL_t \\ yH_t \\ yL_t \end{array} \begin{array}{c} \begin{array}{ccccccc} etapi_{t-1} & iH_{t-1} & iL_{t-1} & piH_{t-1} & piL_{t-1} & yH_{t-1} & yL_{t-1} \end{array} \\ \begin{pmatrix} 0.95 & 0 & 0 & 0 & 0 & 0 & 0 \\ -848.7704 & -1.911 & 2.0657 & 0.0579 & -5.8446 & -13.4357 & 0.2113 \\ -7.7526 & -3e-04 & -1.8409 & 0 & 4.8756 & -0.0019 & -0.1833 \\ -6739.446 & 0 & 0 & 1.0306 & -91.6514 & -101.197 & 1.3713 \\ -0.6098 & 0 & 0 & 0 & 0.9053 & -1e-04 & -0.0135 \\ 16.9118 & 0.2489 & -0.2515 & -0.0026 & 0.24 & 1.264 & -0.0187 \\ 10.4862 & 0.002 & 16.4684 & 0 & -15.5666 & 0.0103 & 1.2203 \end{pmatrix} \end{array}$$

Matrix Q

$$\begin{array}{c} \\ etapi \\ iH \\ iL \\ piH \\ piL \\ yH \\ yL \end{array} \begin{array}{c} \epsilon^{\pi} \\ \begin{pmatrix} 1 \\ -495.6617 \\ -4.6907 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \end{array}$$

Matrix R

$$\begin{array}{c} \\ \lambda_t^{\text{HIGHREGIME}^1} \\ \lambda_t^{\text{HIGHREGIME}^2} \\ \lambda_t^{\text{LOWREGIME}^1} \\ \lambda_t^{\text{LOWREGIME}^2} \\ UH_t \\ UL_t \end{array} \begin{array}{c} \begin{array}{ccccccc} etapi_{t-1} & iH_{t-1} & iL_{t-1} & piH_{t-1} & piL_{t-1} & yH_{t-1} & yL_{t-1} \end{array} \\ \begin{pmatrix} -462.4401 & -0.5903 & 1.1272 & 0.0389 & -5.9375 & -6.2186 & 0.1564 \\ 0.8172 & 0.0017 & -0.0027 & -1e-04 & 0.0104 & 0.0129 & -3e-04 \\ -350.1771 & -0.0115 & -44.8291 & 7e-04 & 301.0756 & -0.1149 & -7.1927 \\ 0.9313 & 0 & 0.194 & 0 & -0.6719 & 4e-04 & 0.0217 \\ 0.0112 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0.0083 & 0 & 0 & 0 & -7e-04 & 0 & 0 \end{pmatrix} \end{array}$$

Matrix S

$$
\begin{array}{l}
 \\
\lambda^{\text{HIGHREGIME}^1} \\
\lambda^{\text{HIGHREGIME}^2} \\
\lambda^{\text{LOWREGIME}^1} \\
\lambda^{\text{LOWREGIME}^2} \\
UH \\
UL
\end{array}
\begin{array}{c}
\epsilon^{\pi} \\
\begin{pmatrix}
-220.5089 \\
0.4387 \\
-152.9985 \\
0.497 \\
0.0111 \\
0.0083
\end{pmatrix}
\end{array}
$$

9 Model statistics

9.1 Basic statistics

	Steady-state value	Std. dev.	Variance	Loglin
etapi	1	0.1303	0.017	Y
iH	-0.0149	49.8555	2485.5672	Y
iL	-1.5222	0.4746	0.2253	Y
$\lambda^{\text{HIGHREGIME}^1}$	0.0103	24.2739	589.2208	Y
$\lambda^{\text{HIGHREGIME}^2}$	0	0.0423	0.0018	N
$\lambda^{\text{LOWREGIME}^1}$	0.0152	17.4504	304.515	Y
$\lambda^{\text{LOWREGIME}^2}$	0	0.0479	0.0023	N
piH	-2e-04	666.7814	444597.4198	Y
piL	-1.5036	0.0585	0.0034	Y
yH	0.0604	11.3389	128.5701	Y
yL	0.0913	7.201	51.8548	Y
UH	-16.4635	0.0015	0	Y
UL	-33.0857	0.0011	0	Y

9.2 Correlation matrix

	etapi	*iH*	*iL*	$\lambda^{\text{HIGHREGIME}^1}$	$\lambda^{\text{HIGHREGIME}^2}$	$\lambda^{\text{LOWREGIME}^1}$	$\lambda^{\text{LOWREGIME}^2}$	*piH*	*piL*
etapi	1	-0.32	-0.312	-0.861	0.436	-0.836	0.436	-0.52	-0.51
iH		1	0.999	0.583	-0.985	0.556	-0.985	-0.294	-0.29
iL			1	0.563	-0.979	0.533	-0.979	-0.324	-0.33
$\lambda^{\text{HIGHREGIME}^1}$				1	-0.71	0.997	-0.71	0.565	0.557
$\lambda^{\text{HIGHREGIME}^2}$					1	-0.689	1	0.125	0.131
$\lambda^{\text{LOWREGIME}^1}$						1	-0.689	0.606	0.602
$\lambda^{\text{LOWREGIME}^2}$							1	0.125	0.131
piH								1	0.997
piL									1
yH									
yL									
UH									
UL									

9.3 Cross correlations with the reference variable (iH)

	$\sigma[\cdot]$ rel. to $\sigma[iH]$	iH_{t-5}	iH_{t-4}	iH_{t-3}	iH_{t-2}	iH_{t-1}	iH_t	iH_{t+1}	iH_{t+2}	iH_{t+3}	iH_{t+4}
$etapi_t$	0.003	0.108	0.145	0.195	0.275	0.43	-0.32	-0.269	-0.222	-0.178	-0.139
iH_t	1	-0.032	-0.041	-0.058	-0.095	-0.186	1	-0.186	-0.095	-0.058	-0.041
iL_t	0.01	-0.032	-0.041	-0.057	-0.094	-0.183	0.999	-0.224	-0.09	-0.05	-0.035
$\lambda_t^{\mathrm{HIGHREGIME}^1}$	0.487	-0.09	-0.116	-0.155	-0.224	-0.369	0.583	0.449	0.18	0.069	0.02
$\lambda_t^{\mathrm{HIGHREGIME}^2}$	0.001	0.044	0.056	0.078	0.122	0.228	-0.985	0.047	0.046	0.044	0.041
$\lambda_t^{\mathrm{LOWREGIME}^1}$	0.35	-0.087	-0.112	-0.15	-0.217	-0.358	0.556	0.517	0.156	0.044	0.004
$\lambda_t^{\mathrm{LOWREGIME}^2}$	0.001	0.044	0.056	0.078	0.122	0.228	-0.985	0.047	0.046	0.044	0.041
piH_t	13.374	-0.053	-0.066	-0.083	-0.112	-0.167	-0.294	0.835	0.283	0.072	-0.009
piL_t	0.001	-0.052	-0.066	-0.084	-0.113	-0.17	-0.299	0.871	0.227	0.039	-0.016
yH_t	0.227	-0.077	-0.102	-0.135	-0.181	-0.26	-0.418	0.542	0.299	0.186	0.124
yL_t	0.144	-0.077	-0.102	-0.135	-0.182	-0.261	-0.421	0.556	0.279	0.174	0.122
UH_t	0	0.108	0.144	0.194	0.275	0.43	-0.313	-0.315	-0.197	-0.168	-0.135
UL_t	0	0.108	0.144	0.194	0.274	0.428	-0.301	-0.299	-0.226	-0.176	-0.135

9.4 Autocorrelations

	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5
$etapi$	0.713	0.471	0.271	0.11	-0.016
iH	-0.186	-0.095	-0.058	-0.041	-0.032
iL	-0.221	-0.089	-0.049	-0.035	-0.028
$\lambda^{\mathrm{HIGHREGIME}^1}$	0.525	0.133	-0.031	-0.102	-0.132
$\lambda^{\mathrm{HIGHREGIME}^2}$	-0.074	-0.071	-0.066	-0.06	-0.054
$\lambda^{\mathrm{LOWREGIME}^1}$	0.534	0.08	-0.064	-0.114	-0.131
$\lambda^{\mathrm{LOWREGIME}^2}$	-0.074	-0.071	-0.066	-0.06	-0.054
piH	0.28	0.008	-0.089	-0.119	-0.121
piL	0.204	-0.024	-0.086	-0.1	-0.098
yH	0.535	0.281	0.123	0.016	-0.059
yL	0.517	0.281	0.133	0.029	-0.048
UH	0.713	0	0	0	0
UL	0	0	0	0	0

10 Impulse response functions

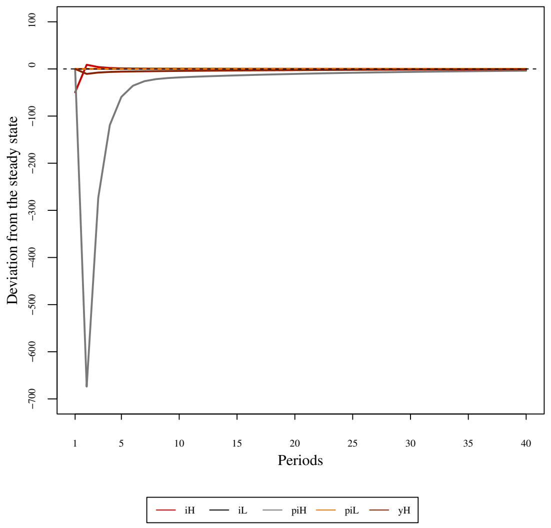

Figure 1: Impulse responses (iH, iL, piH, piL, yH) to ϵ^{π} shock

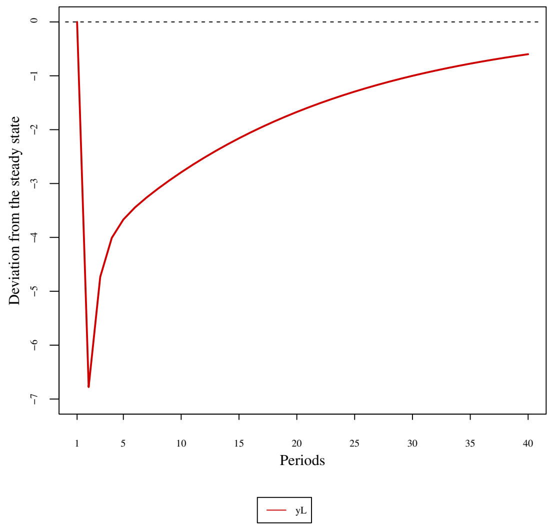

Figure 2: Impulse response (yL) to ϵ^{π} shock