

Table 1: Results from posterior maximization (parameters)

	Prior			Posterior	
	Dist.	Mean	Stdev	Mode	Stdev
α	norm	0.300	0.0500	0.2287	0.0190
ψ	beta	0.500	0.1500	0.8185	0.0736
Φ	norm	1.250	0.1250	1.6516	0.0760
ι_w	beta	0.500	0.1500	0.7501	0.1101
ι_p	beta	0.500	0.1500	0.7844	0.0907
σ_c	norm	1.500	0.3750	1.5555	0.1286
σ_l	norm	2.000	0.7500	0.3766	0.2157
λ	beta	0.700	0.1000	0.4812	0.0500
φ	norm	4.000	1.5000	2.7698	0.9084
μ_w	beta	0.500	0.2000	0.3210	0.0821
μ_p	beta	0.500	0.2000	0.3462	0.0806
$\bar{\gamma}$	norm	0.400	0.1000	0.4060	0.0175
$100(\beta^{-1} - 1)$	gamm	0.250	0.1000	0.1147	0.0465
$\bar{\pi}$	gamm	0.625	0.1000	0.9846	0.1044
\bar{l}	norm	0.000	2.0000	3.7617	1.5615
r_π	norm	1.500	0.2500	2.0369	0.1919
$r_{\Delta y}$	norm	0.125	0.0500	0.2178	0.0326
r_y	norm	0.125	0.0500	0.0476	0.0255
ρ	beta	0.750	0.1000	0.6764	0.0485
ρ_a	beta	0.500	0.2000	0.9637	0.0090
ρ_{ga}	norm	0.500	0.2500	0.5816	0.0929
ρ_b	beta	0.500	0.2000	0.3914	0.1163
ρ_g	beta	0.500	0.2000	0.9660	0.0094
ρ_i	beta	0.500	0.2000	0.7854	0.0591
ρ_r	beta	0.500	0.2000	0.3106	0.0918
ρ_p	beta	0.500	0.2000	0.9740	0.0163
ρ_w	beta	0.500	0.2000	0.9782	0.0060

Table 2: Results from posterior maximization (standard deviation of structural shocks)

		Prior		Posterior	
	Dist.	Mean	Stdev	Mode	Stdev
η^a	invg	0.100	2.0000	0.4301	0.0270
η^b	invg	0.100	2.0000	0.1892	0.0266
η^g	invg	0.100	2.0000	0.5173	0.0299
η^i	invg	0.100	2.0000	0.4717	0.0499
η^m	invg	0.100	2.0000	0.2790	0.0204
η^p	invg	0.100	2.0000	0.2585	0.0173
η^w	invg	0.100	2.0000	0.4980	0.0378

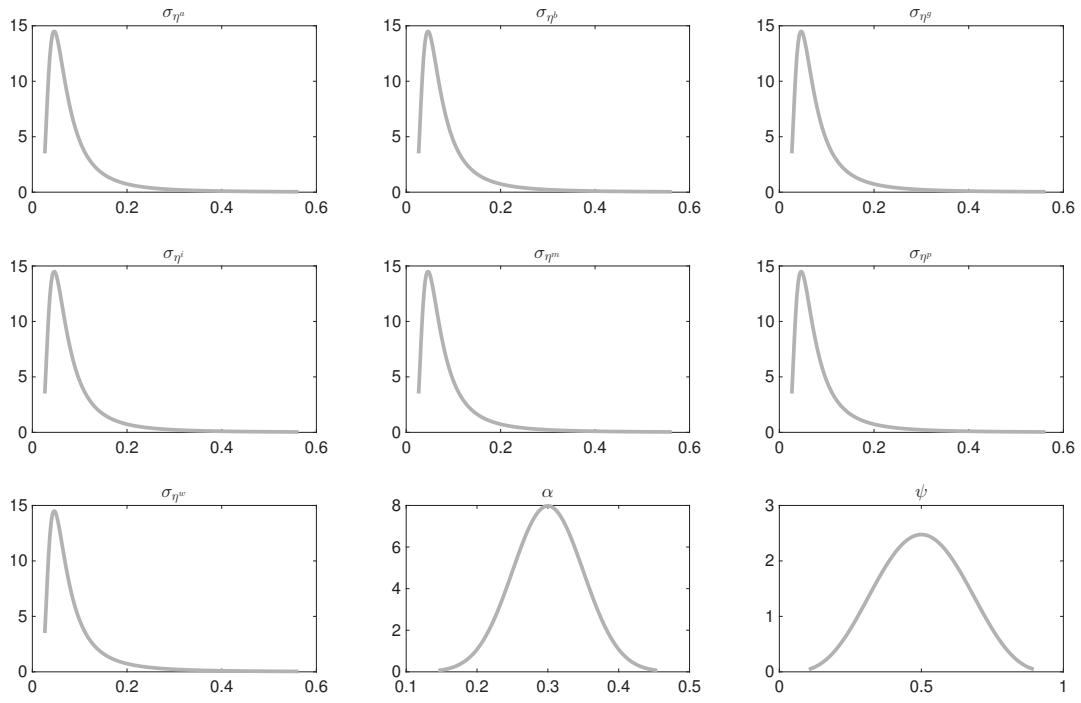


Figure 1: Priors.

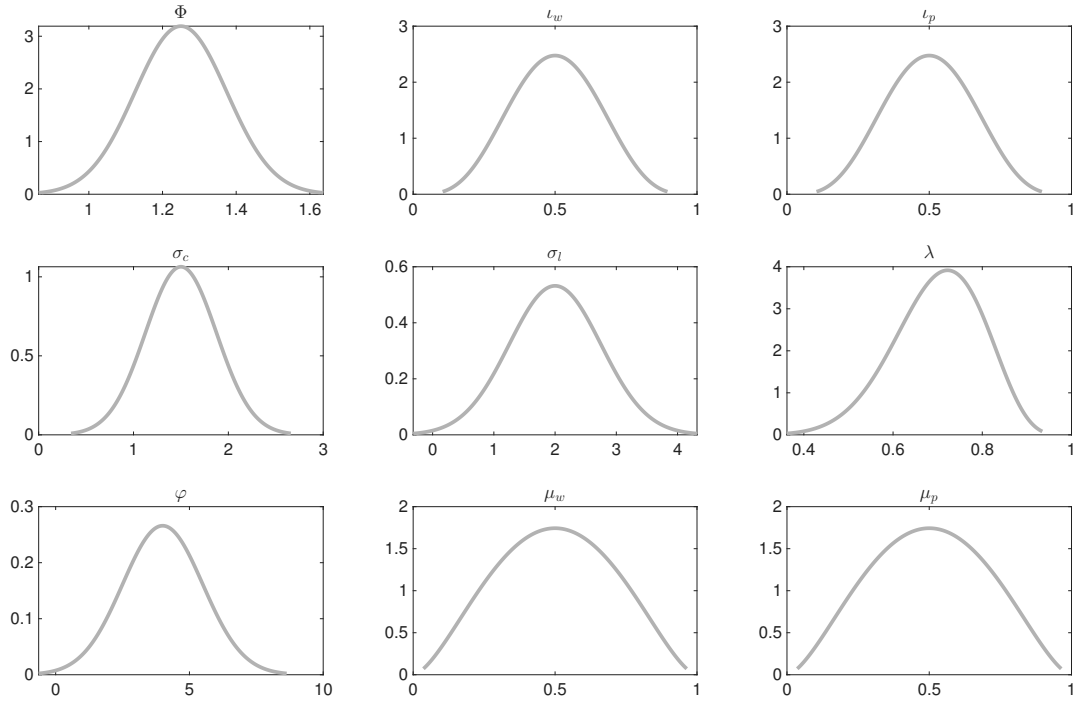


Figure 2: Priors.

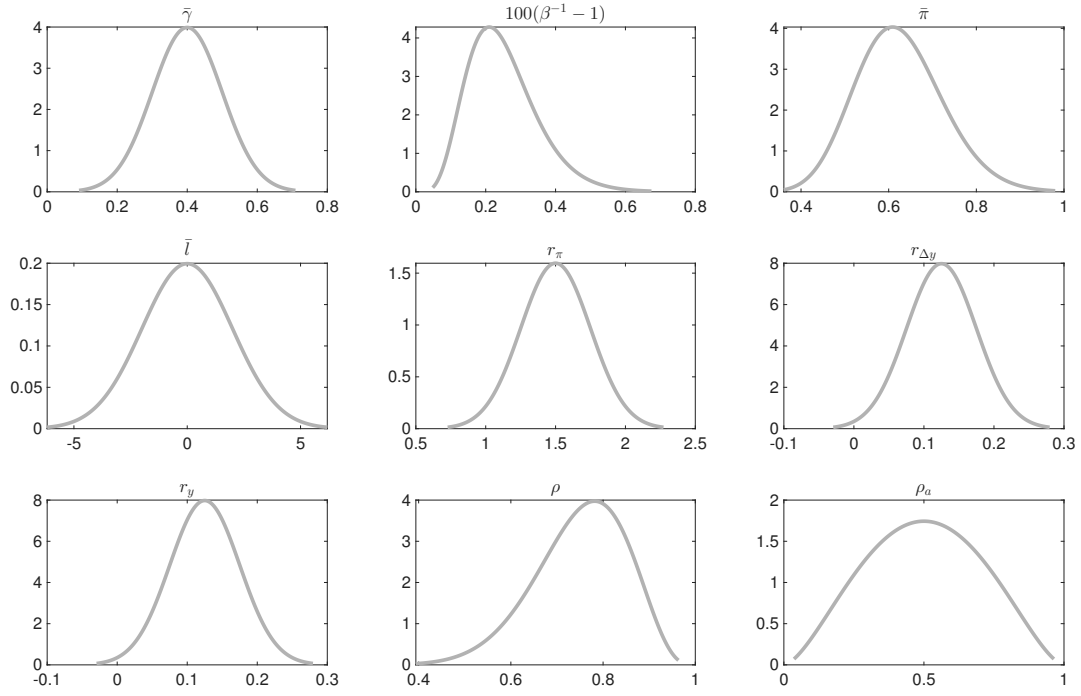


Figure 3: Priors.

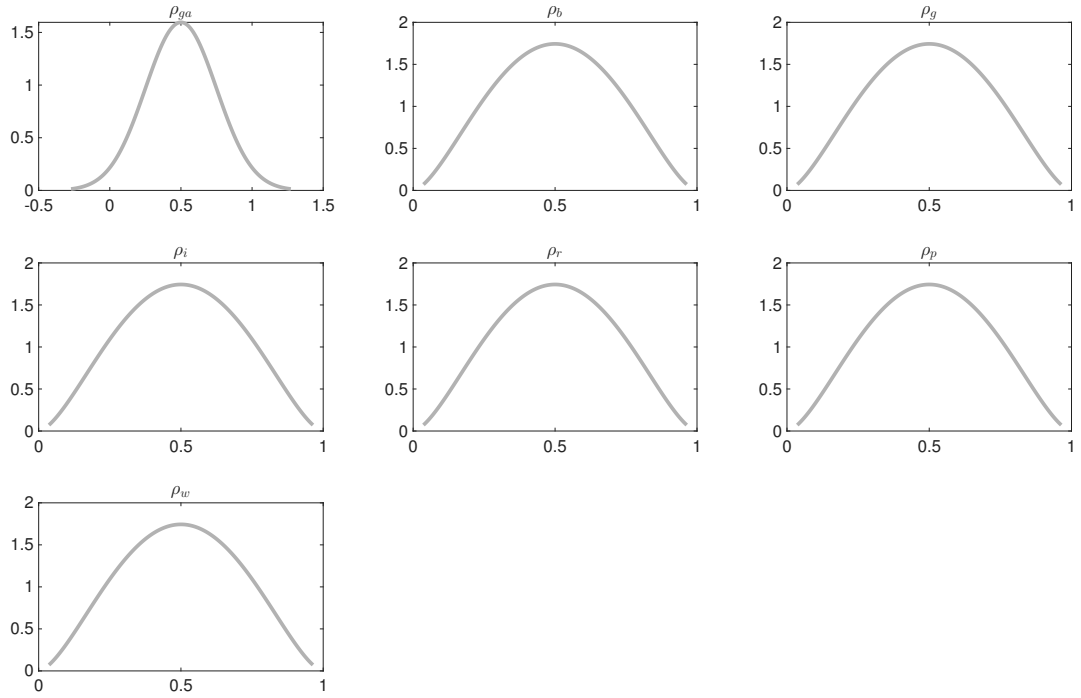


Figure 4: Priors.

Table 3: MATRIX OF COVARIANCE OF EXOGENOUS SHOCKS

		<i>Variables</i>	η^a	η^b	η^g	η^i	η^m	η^p	η^w
η^a	0.185019	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
η^b	0.000000	0.035790	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
η^g	0.000000	0.000000	0.267588	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
η^i	0.000000	0.000000	0.000000	0.222490	0.000000	0.000000	0.000000	0.000000	0.000000
η^m	0.000000	0.000000	0.000000	0.000000	0.000000	0.077860	0.000000	0.000000	0.000000
η^p	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.066802	0.000000	0.000000
η^w	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.247992	

Table 4: Endogenous

Variable	\LaTeX	Description
labobs	$lHOURS$	log hours worked
robs	$FEDFUNDS$	Federal funds rate
pinfobs	dlP	Inflation
dy	$dlGDP$	Output growth rate
dc	$dlCONS$	Consumption growth rate
dinve	$dlINV$	Investment growth rate
dw	$dlWAG$	Wage growth rate
ewma	$\eta^{w,aux}$	Auxiliary wage markup moving average variable
epinfma	$\eta^{p,aux}$	Auxiliary price markup moving average variable
zcapf	z^{flex}	Capital utilization rate flex price economy
rkf	$r^{k,flex}$	rental rate of capital flex price economy
kf	$k^{s,flex}$	Capital services flex price economy
pkf	q^{flex}	real value of existing capital stock flex price economy
cf	c^{flex}	Consumption flex price economy
invef	i^{flex}	Investment flex price economy
yf	y^{flex}	Output flex price economy
labf	l^{flex}	hours worked flex price economy
wf	w^{flex}	real wage flex price economy
rrf	r^{flex}	real interest rate flex price economy
mc	μ_p	gross price markup
zcap	z	Capital utilization rate
rk	r^k	rental rate of capital
k	k^s	Capital services
pk	q	real value of existing capital stock
c	c	Consumption
inve	i	Investment
y	y	Output
lab	l	hours worked
pinf	π	Inflation
w	w	real wage
r	r	nominal interest rate
a	ε_a	productivity process
b	$c_2 * \varepsilon_t^b$	Scaled risk premium shock
g	ε^g	Exogenous spending
qs	ε^i	Investment-specific technology
ms	ε^r	Monetary policy shock process
spinf	ε^p	Price markup shock process
sw	ε^w	Wage markup shock process
kpf	k^{flex}	Capital stock flex price economy
kp	k	Capital stock
muw	μ_w	wage markup

Table 5: Exogenous

Variable	\LaTeX	Description
ea	η^a	productivity shock
eb	η^b	Investment-specific technology shock
eg	η^g	Spending shock
eqs	η^i	Investment-specific technology shock
em	η^m	Monetary policy shock
epinf	η^p	Price markup shock
ew	η^w	Wage markup shock

Table 6: Parameters

Variable	\LaTeX	Description
curvw	ε_w	Curvature Kimball aggregator wages
cgy	ρ_{ga}	Feedback technology on exogenous spending
curvp	ε_p	Curvature Kimball aggregator prices
constelab	\bar{l}	steady state hours
constepinf	$\bar{\pi}$	steady state inflation rate
constebeta	$100(\beta^{-1} - 1)$	time preference rate in percent
cmaw	μ_w	coefficient on MA term wage markup
cmap	μ_p	coefficient on MA term price markup
calfa	α	capital share
czcap	ψ	capacity utilization cost
csadjcost	φ	investment adjustment cost
ctou	δ	depreciation rate
csigma	σ_c	risk aversion
chabb	λ	external habit degree
cfc	Φ	fixed cost share
cindw	ι_w	Indexation to past wages
cprobw	ξ_w	Calvo parameter wages
cindp	ι_p	Indexation to past prices
cprobp	ξ_p	Calvo parameter prices
csigl	σ_l	Frisch elasticity
clandaw	ϕ_w	Gross markup wages
crpi	r_π	Taylor rule inflation feedback
crdy	$r_{\Delta y}$	Taylor rule output growth feedback
cry	r_y	Taylor rule output level feedback
crr	ρ	interest rate persistence
crhoa	ρ_a	persistence productivity shock
crhoas	d_2	Unused parameter
crhob	ρ_b	persistence risk premium shock
crhog	ρ_g	persistence spending shock
crhols	d_1	Unused parameter

Table 6 – Continued

	Variable	\LaTeX	Description
crhoqs	ρ_i		persistence risk premium shock
crhoms	ρ_r		persistence monetary policy shock
crhopinf	ρ_p		persistence price markup shock
crhow	ρ_w		persistence wage markup shock
ctrend	$\bar{\gamma}$		net growth rate in percent
cg	$\frac{\bar{g}}{\bar{y}}$		steady state exogenous spending share

Table 7: Parameter Values

Parameter	Value	Description
ε_w	0.000	Curvature Kimball aggregator wages
ρ_{ga}	0.582	Feedback technology on exogenous spending
ε_p	0.000	Curvature Kimball aggregator prices
\bar{l}	3.762	steady state hours
$\bar{\pi}$	0.985	steady state inflation rate
$100(\beta^{-1} - 1)$	0.115	time preference rate in percent
μ_w	0.321	coefficient on MA term wage markup
μ_p	0.346	coefficient on MA term price markup
α	0.229	capital share
ψ	0.818	capacity utilization cost
φ	2.770	investment adjustment cost
δ	0.025	depreciation rate
σ_c	1.556	risk aversion
λ	0.481	external habit degree
Φ	1.652	fixed cost share
ι_w	0.750	Indexation to past wages
ξ_w	0.500	Calvo parameter wages
ι_p	0.784	Indexation to past prices
ξ_p	0.500	Calvo parameter prices
σ_l	0.377	Frisch elasticity
ϕ_w	1.500	Gross markup wages
r_π	2.037	Taylor rule inflation feedback
$r_{\Delta y}$	0.218	Taylor rule output growth feedback
r_y	0.048	Taylor rule output level feedback
ρ	0.676	interest rate persistence
ρ_a	0.964	persistence productivity shock
d_2	1.000	Unused parameter
ρ_b	0.391	persistence risk premium shock
ρ_g	0.966	persistence spending shock
d_1	0.993	Unused parameter
ρ_i	0.785	persistence risk premium shock
ρ_r	0.311	persistence monetary policy shock
ρ_p	0.974	persistence price markup shock
ρ_w	0.978	persistence wage markup shock
$\bar{\gamma}$	0.406	net growth rate in percent
$\frac{\bar{g}}{\bar{y}}$	0.180	steady state exogenous spending share

Table 8: Prior information (parameters)

	Distribution	Mean	Mode	Std.dev.	Bounds*		90% HPDI	
					Lower	Upper	Lower	Upper
σ_{η^a}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^b}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^g}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^i}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^m}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^p}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
σ_{η^w}	Inv. Gamma	0.1000	0.0461	2.0000	0.0118		5595.7204	0.0326
α	Gaussian	0.3000	0.3000	0.0500	-0.0181		0.6181	0.2178
ψ	Beta	0.5000	0.5000	0.1500	0.0040		0.9960	0.2526
Φ	Gaussian	1.2500	1.2500	0.1250	0.4548		2.0452	1.0444
ι_w	Beta	0.5000	0.5000	0.1500	0.0040		0.9960	0.2526
ι_p	Beta	0.5000	0.5000	0.1500	0.0040		0.9960	0.2526
σ_c	Gaussian	1.5000	1.5000	0.3750	-0.8855		3.8855	0.8832
σ_l	Gaussian	2.0000	2.0000	0.7500	-2.7710		6.7710	0.7664
λ	Beta	0.7000	0.7222	0.1000	0.1025		0.9960	0.5242
φ	Gaussian	4.0000	4.0000	1.5000	-5.5420		13.5420	1.5327
μ_w	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
μ_p	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
$\bar{\gamma}$	Gaussian	0.4000	0.4000	0.1000	-0.2361		1.0361	0.2355
$100(\beta^{-1} - 1)$	Gamma	0.2500	0.2100	0.1000	0.0031		1.4759	0.1111
$\bar{\pi}$	Gamma	0.6250	0.6090	0.1000	0.1814		1.4844	0.4701
\bar{l}	Gaussian	0.0000	0.0000	2.0000	-12.7227		12.7227	-3.2897
r_π	Gaussian	1.5000	1.5000	0.2500	-0.0903		3.0903	1.0888
$r_{\Delta y}$	Gaussian	0.1250	0.1250	0.0500	-0.1931		0.4431	0.0428
r_y	Gaussian	0.1250	0.1250	0.0500	-0.1931		0.4431	0.0428
ρ	Beta	0.7500	0.7817	0.1000	0.1073		0.9991	0.5701
ρ_a	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_{ga}	Gaussian	0.5000	0.5000	0.2500	-1.0903		2.0903	0.0888
ρ_b	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_g	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_i	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_r	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_p	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718
ρ_w	Beta	0.5000	0.5000	0.2000	0.0001		0.9999	0.1718

Note: Displayed bounds are after applying a prior truncation of options_.prior_trunc=1.00e-10

Table 9: COEFFICIENTS OF AUTOCORRELATION

	<i>Order</i>	1	2	3	4	5
y	0.9877	0.9675	0.9441	0.9201	0.8965	
c	0.9926	0.9789	0.9632	0.9475	0.9325	
i	0.9832	0.9466	0.8998	0.8491	0.7980	
π	0.7832	0.5119	0.3078	0.1952	0.1525	
r	0.8885	0.7244	0.5768	0.4674	0.3945	
w	0.9865	0.9677	0.9486	0.9305	0.9135	
k^s	0.9990	0.9963	0.9924	0.9873	0.9812	
l	0.9777	0.9445	0.9079	0.8715	0.8367	

Table 10: MATRIX OF CORRELATIONS

		<hr/> <i>Variables</i> y c i π r w k^s l <hr/>							
y	1.0000	0.8979	0.8494	-0.3020	-0.3426	0.6420	0.7698	0.7779	
c	0.8979	1.0000	0.7399	-0.4258	-0.5340	0.5947	0.8373	0.6844	
i	0.8494	0.7399	1.0000	-0.1319	-0.0801	0.6127	0.6613	0.6649	
π	-0.3020	-0.4258	-0.1319	1.0000	0.6697	-0.2000	-0.2839	-0.2201	
r	-0.3426	-0.5340	-0.0801	0.6697	1.0000	-0.3028	-0.3429	-0.1892	
w	0.6420	0.5947	0.6127	-0.2000	-0.3028	1.0000	0.7477	0.2077	
k^s	0.7698	0.8373	0.6613	-0.2839	-0.3429	0.7477	1.0000	0.3966	
l	0.7779	0.6844	0.6649	-0.2201	-0.1892	0.2077	0.3966	1.0000	

Table 11: THEORETICAL MOMENTS

<i>VARIABLE</i>	<i>MEAN</i>	<i>STD.DEV.</i>	<i>VARIANCE</i>
y	0.0000	6.6270	43.9178
c	0.0000	6.6893	44.7467
i	0.0000	11.9466	142.7219
π	0.0000	0.6372	0.4060
r	0.0000	0.6778	0.4594
w	0.0000	3.9108	15.2945
k^s	0.0000	7.0008	49.0106
l	0.0000	3.3157	10.9940

Table 12: VARIANCE DECOMPOSITION (in percent)

		η^a	η^b	η^g	η^i	η^m	η^p	η^w
y	24.74	0.31	3.94	4.06	0.20	17.55	49.20	
c	11.40	0.49	1.39	1.51	0.28	16.09	68.86	
i	17.24	0.07	1.67	31.11	0.08	21.18	28.66	
π	5.64	10.16	0.94	10.99	17.89	21.28	33.10	
r	8.30	18.53	2.46	30.18	6.66	10.56	23.31	
w	30.11	0.23	0.97	2.97	0.16	61.64	3.92	
k^s	17.15	0.02	1.18	15.14	0.01	29.29	37.20	
l	1.61	0.65	12.02	5.90	0.41	15.73	63.69	

$$cpie = 1 + \frac{\bar{\pi}}{100}$$

$$cgamma = 1 + \frac{\bar{\gamma}}{100}$$

$$cbeta = \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}}$$

$$clandap = \Phi$$

$$cbetabar = \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}$$

$$cr = \frac{1 + \frac{\bar{\pi}}{100}}{\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}}$$

$$crk = \left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}}\right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100}\right)^{\sigma_c} - (1 - \delta)$$

$$cw = \left(\frac{\alpha^\alpha (1 - \alpha)^{1-\alpha}}{\Phi \left(\left(\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100}\right)^{\sigma_c} - (1 - \delta) \right)^\alpha \right)} \right)^{\frac{1}{1-\alpha}}$$

$$cikbar = 1 - \frac{1 - \delta}{1 + \frac{\bar{\gamma}}{100}}$$

$$cik = \left(1 + \frac{\bar{\gamma}}{100}\right) \left(1 - \frac{1 - \delta}{1 + \frac{\bar{\gamma}}{100}}\right)$$

$$clk = \frac{1 - \alpha}{\alpha} \frac{\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}}\right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100}\right)^{\sigma_c} - (1 - \delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100}\right)^{\sigma_c} - (1 - \delta) \right)^\alpha \right)} \right)^{\frac{1}{1-\alpha}}}$$

$$cky = \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$ciy = \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$ccy = 1 - \frac{\bar{g}}{\bar{y}} - \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$crkky = \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} \right.$$

$$\left. - (1-\delta) \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

whlc

$$\Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$1 - \frac{\bar{g}}{\bar{y}} - \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$cwl y = 1 - \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} \right.$$

$$\left. - (1-\delta) \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}$$

$$const er = 100 \left(\frac{1 + \frac{\bar{\pi}}{100}}{\frac{1}{1+\frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}} - 1 \right)$$

$$c1 = \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}$$

$c2$

$$\begin{aligned}
& \Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}}}{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}} \right)^{\alpha-1} \\
& \frac{(1-\alpha) \frac{1}{\alpha} \frac{1}{\phi_w} \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)}{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}} \\
& (\sigma_c - 1) \frac{\left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}}}{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\tilde{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}} \right)^{\alpha-1}}{1-\frac{\bar{g}}{y}-\left(1+\frac{\tilde{\gamma}}{100}\right)\left(1-\frac{1-\delta}{1+\frac{\tilde{\gamma}}{100}}\right)\Phi\left(\frac{1-\alpha}{\alpha}\frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}}\right)^{(-1)}\left(1+\frac{\tilde{\gamma}}{100}\right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha(1-\alpha)^{1-\alpha}}{\Phi\left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}\right)^{(-1)}\left(1+\frac{\tilde{\gamma}}{100}\right)^{\sigma_c-(1-\delta)}\right)^\alpha}\right)^{\frac{1}{1-\alpha}}}\right)^{\frac{1}{1-\alpha}}}} \\
& = \frac{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\tilde{\gamma}}{100}} \right)}{1-\frac{\bar{g}}{y}-\left(1+\frac{\tilde{\gamma}}{100}\right)\left(1-\frac{1-\delta}{1+\frac{\tilde{\gamma}}{100}}\right)\Phi\left(\frac{1-\alpha}{\alpha}\frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}}\right)^{(-1)}\left(1+\frac{\tilde{\gamma}}{100}\right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha(1-\alpha)^{1-\alpha}}{\Phi\left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}\right)^{(-1)}\left(1+\frac{\tilde{\gamma}}{100}\right)^{\sigma_c-(1-\delta)}\right)^\alpha}\right)^{\frac{1}{1-\alpha}}}\right)^{\frac{1}{1-\alpha}}}
\end{aligned}$$

$$c3 = \frac{1 - \frac{\lambda}{1+\frac{\tilde{\gamma}}{100}}}{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\tilde{\gamma}}{100}} \right)}$$

$$i1 = \frac{1}{1 + \left(1 + \frac{\tilde{\gamma}}{100} \right) \frac{1}{1+\frac{100(\beta-1-1)}{100}} \left(1 + \frac{\tilde{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$i2 = \frac{1}{1 + \left(1 + \frac{\tilde{\gamma}}{100} \right) \frac{1}{1+\frac{100(\beta-1-1)}{100}} \left(1 + \frac{\tilde{\gamma}}{100} \right)^{(-\sigma_c)}} \frac{1}{\varphi \left(1 + \frac{\tilde{\gamma}}{100} \right)^2}$$

$$q1 = \frac{1 - \delta}{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1 + \frac{\tilde{\gamma}}{100} \right)^{\sigma_c}}$$

$$q2 = \frac{1}{\frac{1 - \frac{\lambda}{1+\frac{\tilde{\gamma}}{100}}}{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\tilde{\gamma}}{100}} \right)}}$$

$$k1 = 1 - \left(1 - \frac{1 - \delta}{1 + \frac{\tilde{\gamma}}{100}} \right)$$

$$k2 = \varphi \left(1 - \frac{1 - \delta}{1 + \frac{\bar{\gamma}}{100}} \right) \left(1 + \frac{\bar{\gamma}}{100} \right)^2$$

$$pi1 = \iota_p \frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$pi2 = \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)} \frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$pi3 = \frac{\frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}}{\frac{(1 - \xi_p) \left(1 - \xi_p \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)} \right)}{\xi_p}} \frac{1}{1 + (\Phi - 1) \varepsilon_p}$$

$$w1 = \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$w2 = \frac{1 + \iota_w \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$w3 = \frac{\iota_w}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}}$$

$$w4 = \frac{1}{1 + (\phi_w - 1) \varepsilon_w} \frac{(1 - \xi_w) \left(1 - \xi_w \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)} \right)}{\xi_w \left(1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)} \right)}$$

$$w5 = \frac{1}{1 - \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}}}$$

$$w6 = \frac{\frac{\lambda}{1 + \frac{\bar{\gamma}}{100}}}{1 - \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}}}$$

$$\varepsilon_{at} = \alpha r^{k, flex}_t + (1 - \alpha) w^{flex}_t \quad (1)$$

$$z^{flex}_t = r^{k,flex}_t \frac{1}{\frac{\psi}{1-\psi}} \quad (2)$$

$$r^{k,flex}_t = w^{flex}_t + l^{flex}_t - k^{s,flex}_t \quad (3)$$

$$k^{s,flex}_t = z^{flex}_t + k^{flex}_{t-1} \quad (4)$$

$$\begin{aligned} i^{flex}_t &= \varepsilon^i_t + i^{flex}_{t-1} \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} (1 + \frac{\bar{\gamma}}{100})^{(-\sigma_c)}} \\ &\quad + i^{flex}_{t+1} \left(1 - \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} (1 + \frac{\bar{\gamma}}{100})^{(-\sigma_c)}} \right) \\ &\quad + q^{flex}_t \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} (1 + \frac{\bar{\gamma}}{100})^{(-\sigma_c)}} \frac{1}{\varphi (1 + \frac{\bar{\gamma}}{100})^2} \end{aligned} \quad (5)$$

$$\begin{aligned} q^{flex}_t &= q^{flex}_{t+1} \frac{1 - \delta}{\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} (1 + \frac{\bar{\gamma}}{100})^{\sigma_c}} \\ &\quad + r^{k,flex}_{t+1} \left(1 - \frac{1 - \delta}{\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} (1 + \frac{\bar{\gamma}}{100})^{\sigma_c}} \right) + c_2 * \varepsilon_{tt}^b \frac{1}{\frac{1 - \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}}}{\sigma_c \left(1 + \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}} \right)}} - r^{flex}_t \end{aligned} \quad (6)$$

$$c^{flex}_t = c_2 * \varepsilon_{tt}^b + c^{flex}_{t-1} \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} + c^{flex}_{t+1} \left(1 - \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} \right) + (l^{flex}_t \quad (7)$$

$$\begin{aligned} & \left(\frac{\Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} (1+\frac{\bar{\gamma}}{100})^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} (1+\frac{\bar{\gamma}}{100})^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}}{(\sigma_c - 1)} \right. \\ & \quad \left. 1 - \frac{\bar{g}}{\bar{y}} - (1+\frac{\bar{\gamma}}{100}) \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} (1+\frac{\bar{\gamma}}{100})^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} (1+\frac{\bar{\gamma}}{100})^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}}{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)} \right. \\ & \quad \left. - l^{flex}_{t+1} \right) - r^{flex}_t \frac{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)} \end{aligned}$$

$$\begin{aligned}
y^{flex}_t = & \varepsilon_t^g + c^{flex}_t \left(1 - \frac{\bar{g}}{\bar{y}} - \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \right. \\
& + i^{flex}_t \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \\
& + \frac{\bar{\gamma}}{100} \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \\
& + z^{flex}_t \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \\
& \left. - (1-\delta) \right) \Phi \left(\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta)}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta^{-1}-1)}{100} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1-\delta) \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \right) \quad (8)
\end{aligned}$$

$$y^{flex}_t = \Phi \left(\varepsilon_{at} + \alpha k^{s,flex}_t + (1-\alpha) l^{flex}_t \right) \quad (9)$$

$$w^{flex}_t = l^{flex}_t \sigma_l + c^{flex}_t \frac{1}{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} - c^{flex}_{t-1} \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} \quad (10)$$

$$\begin{aligned}
k_t^{flex} &= k_t^{flex} = k_{t-1}^{flex} \left(1 - \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \right) + i_t^{flex} \left(1 - \left(1 - \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \right) \right) \\
&\quad + \varepsilon_t^i \varphi \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \left(1 + \frac{\bar{\gamma}}{100} \right)^2
\end{aligned} \tag{11}$$

$$\mu_{p_t} = \alpha r_t^k + (1 - \alpha) w_t - \varepsilon_{at} \tag{12}$$

$$z_t = \frac{1}{\frac{\psi}{1-\psi}} r_t^k \tag{13}$$

$$r_t^k = w_t + l_t - k_t^s \tag{14}$$

$$k_t^s = z_t + k_{t-1} \tag{15}$$

$$\begin{aligned}
k_t &= \varepsilon_t^i \varphi \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \left(1 + \frac{\bar{\gamma}}{100} \right)^2 + k_{t-1} \left(1 - \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \right) + i_t \left(1 - \left(1 - \left(1 - \frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \right) \right) \\
&\tag{16}
\end{aligned}$$

$$\begin{aligned}
i_t &= \varepsilon_t^i + i_{t-1} \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}} \\
&\quad + i_{t+1} \left(1 - \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}} \right) \\
&\quad + q_t \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100} \right) \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)}} \frac{1}{\varphi \left(1 + \frac{\bar{\gamma}}{100} \right)^2}
\end{aligned} \tag{17}$$

$$\begin{aligned}
q_t &= c_2 * \varepsilon_{tt}^b \frac{1}{\frac{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{\sigma_c \left(1 + \frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)}} + q_{t+1} \frac{1 - \delta}{\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c}} \\
&\quad + r_t^k \left(1 - \frac{1 - \delta}{\left(\frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c}} \right) - (r_t - \pi_{t+1})
\end{aligned} \tag{18}$$

$$c_t = c_2 * \varepsilon_{tt}^b + c_{t-1} \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1+\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} + c_{t+1} \left(1 - \frac{\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{1+\frac{\lambda}{1+\frac{\bar{\gamma}}{100}}} \right) + (l_t \quad (19)$$

$$\begin{aligned}
& \left(\Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1} \right. \\
& \quad \left. \frac{(1-\alpha) \frac{1}{\phi_w}}{\alpha} \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^{\frac{1}{1-\alpha}} \right. \\
& \quad \left. \frac{1-\frac{\bar{g}}{y} - \left(1+\frac{\bar{\gamma}}{100} \right) \left(1-\frac{1-\delta}{1+\frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{\frac{1-\alpha}{\alpha} \frac{\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)}}{\left(\frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{\Phi \left(\left(\frac{1}{1+\frac{100(\beta-1-1)}{100}} \right)^{(-1)} \left(1+\frac{\bar{\gamma}}{100} \right)^{\sigma_c-(1-\delta)} \right)^\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\alpha-1}}{\sigma_c \left(1+\frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)} \right. \\
& \quad \left. - l_{t+1} \right) - \frac{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{\sigma_c \left(1+\frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)} \\
& \quad - (r_t - \pi_{t+1}) \frac{1 - \frac{\lambda}{1+\frac{\bar{\gamma}}{100}}}{\sigma_c \left(1+\frac{\lambda}{1+\frac{\bar{\gamma}}{100}} \right)}
\end{aligned}$$

$$\begin{aligned}
y_t = \varepsilon_t^g + c_t & \left(1 - \frac{\bar{g}}{\bar{y}} \right. \\
& - \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1 - \delta}{1 + \frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1 - \alpha}{\alpha} \frac{\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta)}{\left(\frac{\alpha^\alpha (1 - \alpha)^{1 - \alpha}}{\Phi \left(\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta) \right)^\alpha} \right)^{\frac{1}{1 - \alpha}}} \right)^{\alpha - 1} \\
& + i_t \left(1 + \frac{\bar{\gamma}}{100} \right) \left(1 - \frac{1 - \delta}{1 + \frac{\bar{\gamma}}{100}} \right) \Phi \left(\frac{1 - \alpha}{\alpha} \frac{\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta)}{\left(\frac{\alpha^\alpha (1 - \alpha)^{1 - \alpha}}{\Phi \left(\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta) \right)^\alpha} \right)^{\frac{1}{1 - \alpha}}} \right)^{\alpha - 1} \\
& + z_t \left(\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} \right. \\
& \left. - (1 - \delta) \right) \Phi \left(\frac{1 - \alpha}{\alpha} \frac{\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta)}{\left(\frac{\alpha^\alpha (1 - \alpha)^{1 - \alpha}}{\Phi \left(\left(\frac{1}{1 + \frac{100(\beta^{-1} - 1)}{100}} \right)^{(-1)} \left(1 + \frac{\bar{\gamma}}{100} \right)^{\sigma_c} - (1 - \delta) \right)^\alpha} \right)^{\frac{1}{1 - \alpha}}} \right)^{\alpha - 1}
\end{aligned} \tag{20}$$

$$y_t = \Phi (\varepsilon_{at} + \alpha k_t^s + (1 - \alpha) l_t) \tag{21}$$

$$\begin{aligned}
\pi_t = & \varepsilon_t^p + \pi_{t-1} \iota_p \frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \\
& + \pi_{t+1} \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)} \frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \\
& + \mu_{p_t} \frac{\frac{1}{1 + \iota_p \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \frac{(1-\xi_p) \left(1 - \xi_p \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}\right)}{\xi_p}}{1 + (\Phi - 1) \varepsilon_p}
\end{aligned} \tag{22}$$

$$\begin{aligned}
w_t = & \varepsilon_t^w + w_{t-1} \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \\
& + (\pi_{t+1} + w_{t+1}) \left(1 - \frac{1}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}}\right) \\
& - \pi_t \frac{1 + \iota_w \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \\
& + \pi_{t-1} \frac{\iota_w}{1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}} \\
& - \mu_{w_t} \frac{1}{1 + (\phi_w - 1) \varepsilon_w} \frac{(1 - \xi_w) \left(1 - \xi_w \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}\right)}{\xi_w \left(1 + \left(1 + \frac{\bar{\gamma}}{100}\right) \frac{1}{1 + \frac{100(\beta-1-1)}{100}} \left(1 + \frac{\bar{\gamma}}{100}\right)^{(-\sigma_c)}\right)}
\end{aligned} \tag{23}$$

$$\mu_{w_t} = w_t - \left(\sigma_l l_t + \frac{1}{1 - \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}}} \left(c_t - c_{t-1} \frac{\lambda}{1 + \frac{\bar{\gamma}}{100}} \right) \right) \tag{24}$$

$$r_t = \pi_t r_\pi (1 - \rho) + (1 - \rho) r_y (y_t - y^{flex}_t) + r_{\Delta y} (y_t - y^{flex}_t - y_{t-1} + y^{flex}_{t-1}) + \rho r_{t-1} + \varepsilon_t^r \tag{25}$$

$$\varepsilon_{at} = \rho_a \varepsilon_{at-1} + \eta_t^a \tag{26}$$

$$c_2 * \varepsilon_{tt}^b = \rho_b c_2 * \varepsilon_{tt-1}^b + \eta_t^b \tag{27}$$

$$\varepsilon_t^g = \rho_g \varepsilon_{t-1}^g + \eta_t^g + \eta_t^a \rho_{ga} \tag{28}$$

$$\varepsilon_t^i = \rho_i \varepsilon_{t-1}^i + \eta_t^i \tag{29}$$

$$\varepsilon^r_t = \rho_r \varepsilon^r_{t-1} + \eta^m_t \quad (30)$$

$$\varepsilon^p_t = \rho_p \varepsilon^p_{t-1} + \eta^{p,aux}_t - \mu_p \eta^{p,aux}_{t-1} \quad (31)$$

$$\eta^{p,aux}_t = \eta^p_t \quad (32)$$

$$\varepsilon^w_t = \rho_w \varepsilon^w_{t-1} + \eta^{w,aux}_t - \mu_w \eta^{w,aux}_{t-1} \quad (33)$$

$$\eta^{w,aux}_t = \eta^w_t \quad (34)$$

$$dlGDP_t = \bar{\gamma} + y_t - y_{t-1} \quad (35)$$

$$dlCONS_t = \bar{\gamma} + c_t - c_{t-1} \quad (36)$$

$$dlINV_t = \bar{\gamma} + i_t - i_{t-1} \quad (37)$$

$$dlWAG_t = \bar{\gamma} + w_t - w_{t-1} \quad (38)$$

$$dlP_t = \bar{\pi} + \pi_t \quad (39)$$

$$FEDFUNDS_t = r_t + 100 \left(\frac{1 + \frac{\bar{\pi}}{100}}{\frac{1}{1 + \frac{100(\beta-1-1)}{100}}} \left(1 + \frac{\bar{\gamma}}{100} \right)^{(-\sigma_c)} - 1 \right) \quad (40)$$

$$lHOURS_t = l_t + \bar{l} \quad (41)$$

$$cpie = 1 + \frac{\bar{\pi}}{100}$$

$$cgamma = 1 + \frac{\bar{\gamma}}{100}$$

$$cbeta = \frac{1}{1 + \frac{100(\beta^{-1}-1)}{100}}$$

$$clandap = \Phi$$

$$cbetabar = cbeta \, cgamma^{(-\sigma_c)}$$

$$cr = \frac{cpie}{cbeta \, cgamma^{(-\sigma_c)}}$$

$$crk = cbeta^{(-1)} \, cgamma^{\sigma_c} - (1 - \delta)$$

$$cw = \left(\frac{\alpha^\alpha (1 - \alpha)^{1-\alpha}}{clandap \, crk^\alpha} \right)^{\frac{1}{1-\alpha}}$$

$$cikbar = 1 - \frac{1 - \delta}{cgamma}$$

$$cik = cgamma \left(1 - \frac{1 - \delta}{cgamma} \right)$$

$$clk = \frac{1 - \alpha}{\alpha} \frac{crk}{cw}$$

$$cky = \Phi \, clk^{\alpha-1}$$

$$ciy = cik \, cky$$

$$ccy = 1 - \frac{\bar{g}}{\bar{y}} - cik \, cky$$

$$crkky = crk \, cky$$

$$cwhlc = \frac{cky \, crk \, \frac{(1-\alpha)^{\frac{1}{\phi_w}}}{\alpha}}{ccy}$$

$$cwly = 1 - crk cky$$

$$conster = 100 (cr - 1)$$

$$c1 = \frac{\frac{\lambda}{cgamma}}{1 + \frac{\lambda}{cgamma}}$$

$$c2 = \frac{(\sigma_c - 1) cwhlc}{\sigma_c \left(1 + \frac{\lambda}{cgamma}\right)}$$

$$c3 = \frac{1 - \frac{\lambda}{cgamma}}{\sigma_c \left(1 + \frac{\lambda}{cgamma}\right)}$$

$$i1 = \frac{1}{1 + cgamma cbetabar}$$

$$i2 = \frac{1}{1 + cgamma cbetabar} \frac{1}{cgamma^2 \varphi}$$

$$q1 = \frac{1 - \delta}{1 - \delta + crk}$$

$$q2 = \frac{1}{\frac{1 - \frac{\lambda}{cgamma}}{\sigma_c \left(1 + \frac{\lambda}{cgamma}\right)}}$$

$$k1 = 1 - cikbar$$

$$k2 = \varphi cgamma^2 cikbar$$

$$pi1 = \iota_p \frac{1}{1 + cgamma cbetabar \iota_p}$$

$$pi2 = cgamma cbetabar \frac{1}{1 + cgamma cbetabar \iota_p}$$

$$pi3 = \frac{\frac{1}{1 + cgamma cbetabar \iota_p} \frac{(1 - \xi_p)(1 - cgamma cbetabar \xi_p)}{\xi_p}}{1 + (\Phi - 1) \varepsilon_p}$$

$$w1 = \frac{1}{1 + cgamma\ cbetabar}$$

$$w2 = \frac{1 + cgamma\ cbetabar\ \iota_w}{1 + cgamma\ cbetabar}$$

$$w3 = \frac{\iota_w}{1 + cgamma\ cbetabar}$$

$$w4 = \frac{(1 - \xi_w) (1 - cgamma\ cbetabar\ \xi_w)}{(1 + cgamma\ cbetabar) \xi_w} \frac{1}{1 + (\phi_w - 1) \varepsilon_w}$$

$$w5 = \frac{1}{1 - \frac{\lambda}{cgamma}}$$

$$w6 = \frac{\frac{\lambda}{cgamma}}{1 - \frac{\lambda}{cgamma}}$$

$$\varepsilon_{at} = \alpha r^{k,flex}_t + (1 - \alpha) w^{flex}_t \quad (42)$$

$$z^{flex}_t = r^{k,flex}_t \frac{1}{\frac{\psi}{1-\psi}} \quad (43)$$

$$r^{k,flex}_t = w^{flex}_t + l^{flex}_t - k^{s,flex}_t \quad (44)$$

$$k^{s,flex}_t = z^{flex}_t + k^{flex}_{t-1} \quad (45)$$

$$i^{flex}_t = i1 i^{flex}_{t-1} + (1 - i1) i^{flex}_{t+1} + i2 q^{flex}_t + \varepsilon^i_t \quad (46)$$

$$q^{flex}_t = q1 q^{flex}_{t+1} + (1 - q1) r^{k,flex}_{t+1} + q2 c_2 * \varepsilon^b_{tt} - r^{flex}_t \quad (47)$$

$$c^{flex}_t = c_2 * \varepsilon^b_{tt} + c1 c^{flex}_{t-1} + (1 - c1) c^{flex}_{t+1} + c2 (l^{flex}_t - l^{flex}_{t+1}) - r^{flex}_t c3 \quad (48)$$

$$y^{flex}_t = ccy c^{flex}_t + i^{flex}_t ciy + \varepsilon^g_t + z^{flex}_t crkky \quad (49)$$

$$y^{flex}_t = \Phi (\varepsilon_{at} + \alpha k^{s,flex}_t + (1 - \alpha) l^{flex}_t) \quad (50)$$

$$w^{flex}_t = l^{flex}_t \sigma_l + c^{flex}_t w5 - c^{flex}_{t-1} w6 \quad (51)$$

$$k^{flex}_t = k^{flex}_{t-1} k1 + i^{flex}_t (1 - k1) + \varepsilon^i_t k2 \quad (52)$$

$$\mu_{p_t} = \alpha r^k_t + (1 - \alpha) w_t - \varepsilon_{at} \quad (53)$$

$$z_t = \frac{1}{\frac{\psi}{1-\psi}} r^k_t \quad (54)$$

$$r^k_t = w_t + l_t - k^s_t \quad (55)$$

$$k^s_t = z_t + k_{t-1} \quad (56)$$

$$k_t = \varepsilon^i_t k2 + k1 k_{t-1} + (1 - k1) i_t \quad (57)$$

$$i_t = \varepsilon^i_t + i1 i_{t-1} + (1 - i1) i_{t+1} + i2 q_t \quad (58)$$

$$q_t = q2 c_2 * \varepsilon^b_{tt} + q1 q_{t+1} + (1 - q1) r^k_{t+1} - (r_t - \pi_{t+1}) \quad (59)$$

$$c_t = c_2 * \varepsilon^b_{tt} + c1 c_{t-1} + (1 - c1) c_{t+1} + c2 (l_t - l_{t+1}) - c3 (r_t - \pi_{t+1}) \quad (60)$$

$$y_t = \varepsilon^g_t + ccy c_t + ciy i_t + crkky z_t \quad (61)$$

$$y_t = \Phi (\varepsilon_{at} + \alpha k^s_t + (1 - \alpha) l_t) \quad (62)$$

$$\pi_t = pi1 \pi_{t-1} + \pi_{t+1} pi2 + \mu_{p_t} pi3 + \varepsilon^p_t \quad (63)$$

$$w_t = w1 w_{t-1} + (1 - w1) (\pi_{t+1} + w_{t+1}) - \pi_t w2 + \pi_{t-1} w3 - w4 \mu_{w_t} + \varepsilon^w_t \quad (64)$$

$$\mu_{w_t} = w_t - \left(\sigma_l l_t + \frac{1}{1 - \frac{\lambda}{cgamma}} \left(c_t - \frac{\lambda}{cgamma} c_{t-1} \right) \right) \quad (65)$$

$$r_t = \pi_t r_\pi (1 - \rho) + (1 - \rho) r_y (y_t - y^{flex}_t) + r_{\Delta y} (y_t - y^{flex}_t - y_{t-1} + y^{flex}_{t-1}) + \rho r_{t-1} + \varepsilon^r_t \quad (66)$$

$$\varepsilon_{at} = \rho_a \varepsilon_{at-1} + \eta^a_t \quad (67)$$

$$c_2 * \varepsilon^b_{tt} = \rho_b c_2 * \varepsilon^b_{tt-1} + \eta^b_t \quad (68)$$

$$\varepsilon^g_t = \rho_g \varepsilon^g_{t-1} + \eta^g_t + \eta^a_t \rho_{ga} \quad (69)$$

$$\varepsilon^i_t = \rho_i \varepsilon^i_{t-1} + \eta^i_t \quad (70)$$

$$\varepsilon^r_t = \rho_r \varepsilon^r_{t-1} + \eta^m_t \quad (71)$$

$$\varepsilon^p_t = \rho_p \varepsilon^p_{t-1} + \eta^{p,aux}_t - \mu_p \eta^{p,aux}_{t-1} \quad (72)$$

$$\eta^{p,aux}_t = \eta^p_t \quad (73)$$

$$\varepsilon^w_t = \rho_w \varepsilon^w_{t-1} + \eta^{w,aux}_t - \mu_w \eta^{w,aux}_{t-1} \quad (74)$$

$$\eta^{w,aux}_t = \eta^w_t \quad (75)$$

$$dlGDP_t = \bar{\gamma} + y_t - y_{t-1} \quad (76)$$

$$dlCONS_t = \bar{\gamma} + c_t - c_{t-1} \quad (77)$$

$$dlINV_t = \bar{\gamma} + i_t - i_{t-1} \quad (78)$$

$$dlWAG_t = \bar{\gamma} + w_t - w_{t-1} \quad (79)$$

$$dlP_t = \bar{\pi} + \pi_t \quad (80)$$

$$FEDFUNDS_t = r_t + conster \quad (81)$$

$$lHOURS_t = l_t + \bar{l} \quad (82)$$

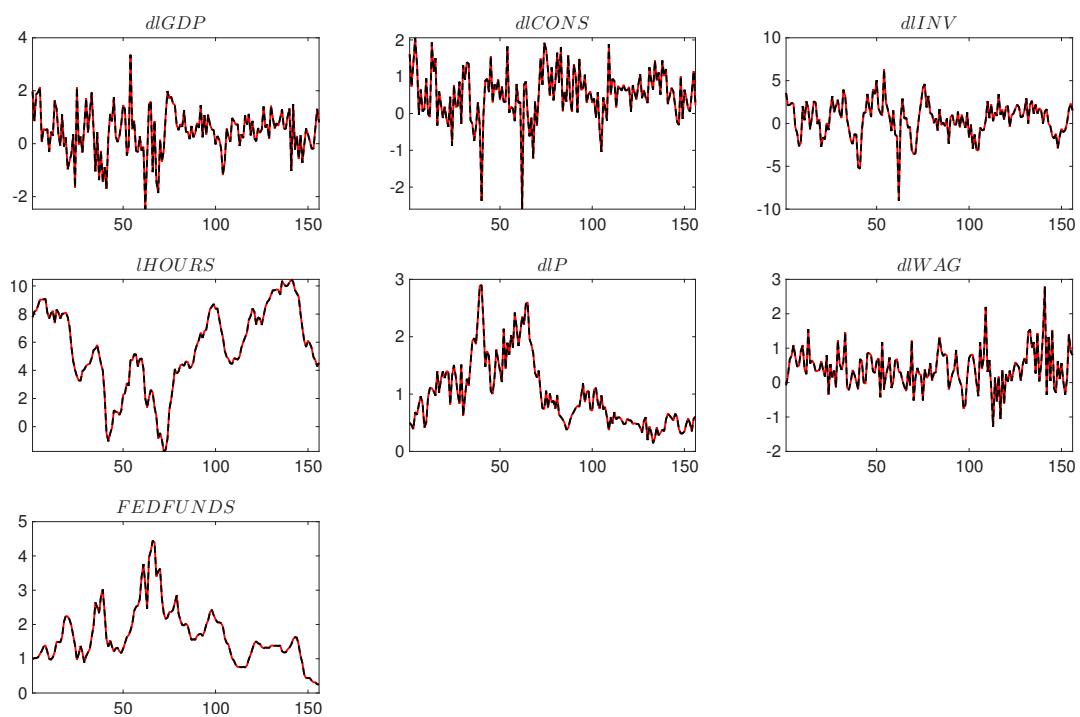


Figure 5: Historical and smoothed variables.

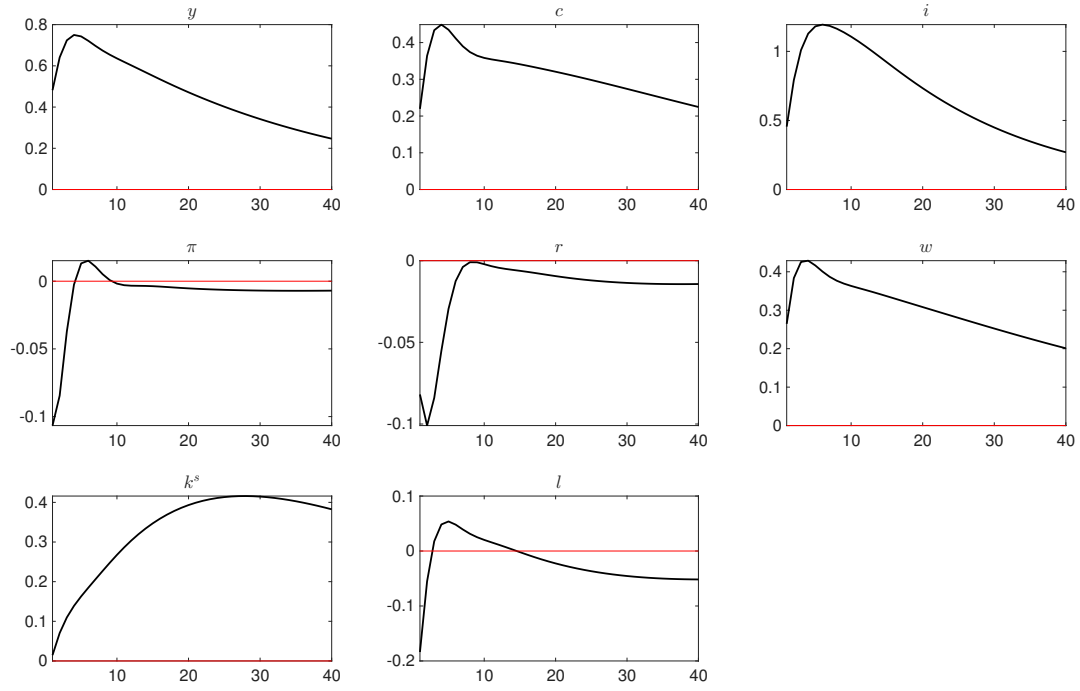


Figure 6: Impulse response functions (orthogonalized shock to η^a).

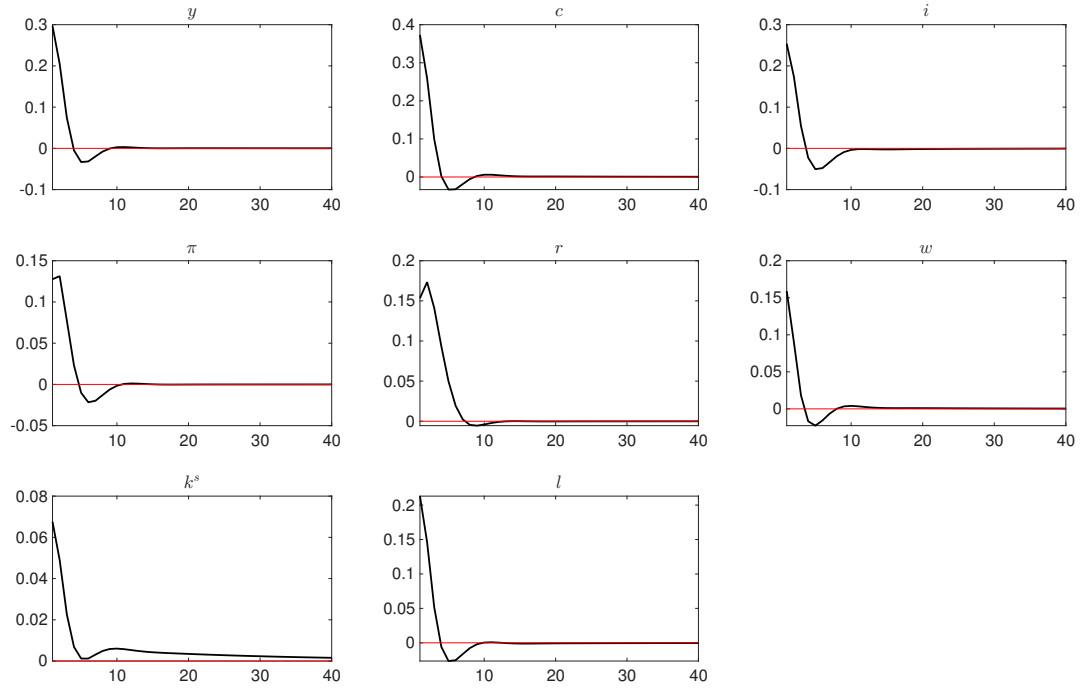


Figure 7: Impulse response functions (orthogonalized shock to η^b).

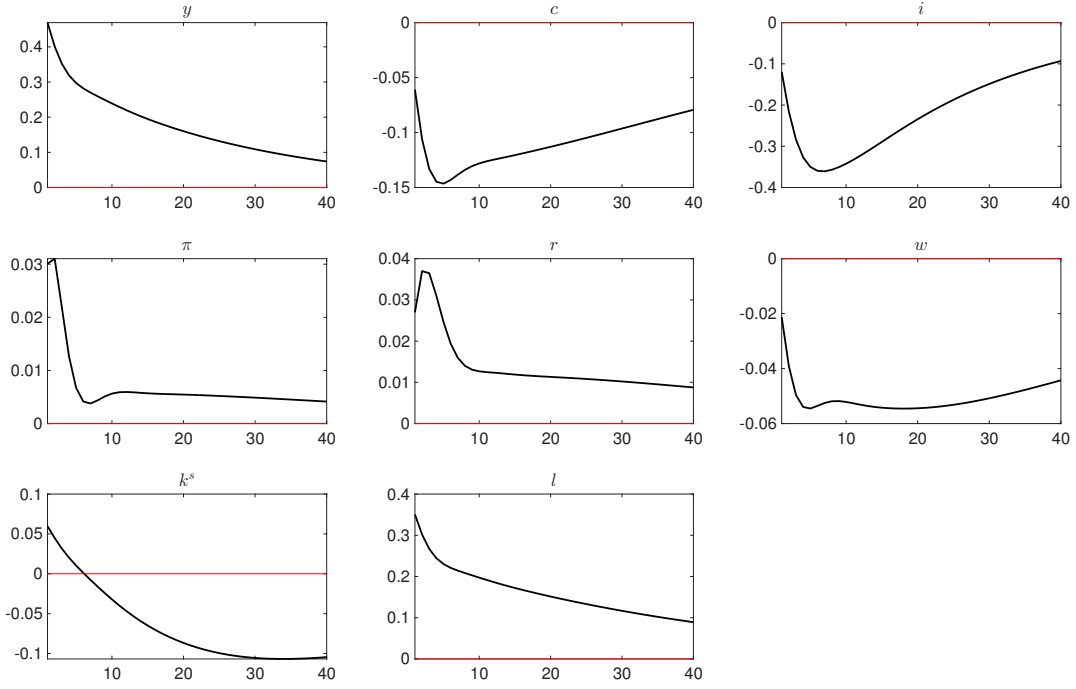


Figure 8: Impulse response functions (orthogonalized shock to η^g).

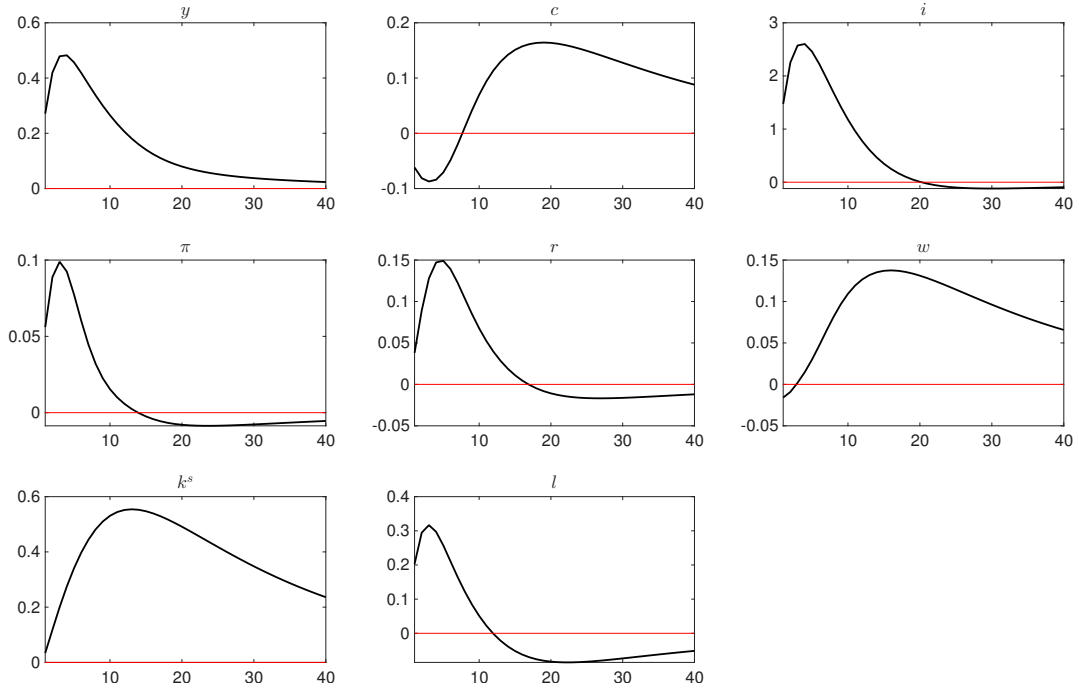


Figure 9: Impulse response functions (orthogonalized shock to η^b).

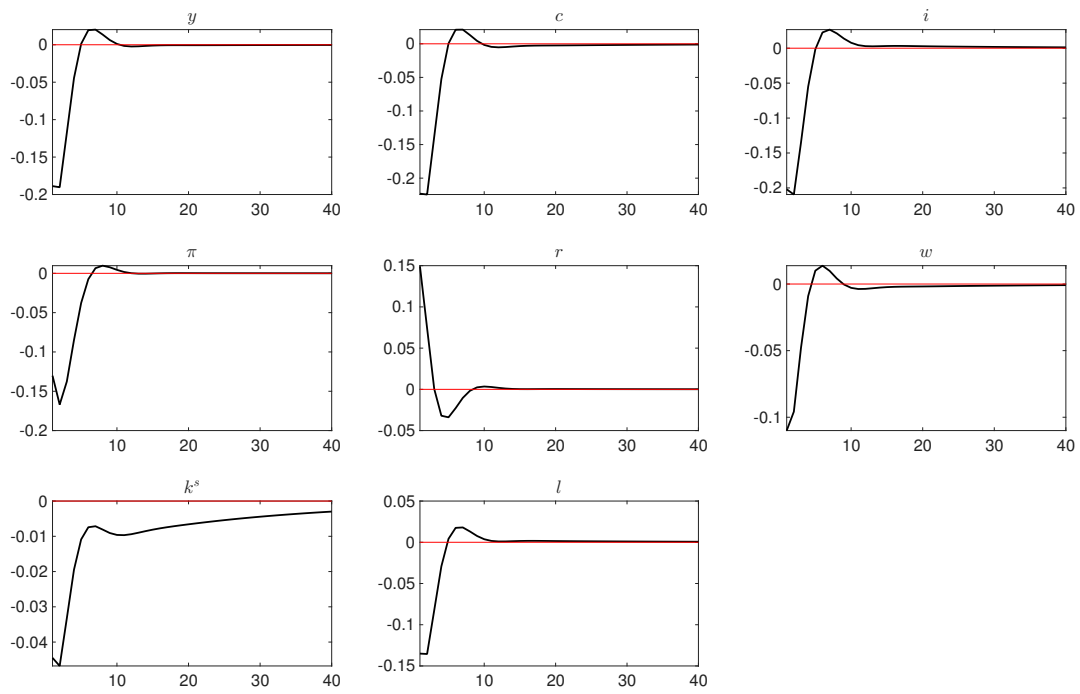


Figure 10: Impulse response functions (orthogonalized shock to η^m).

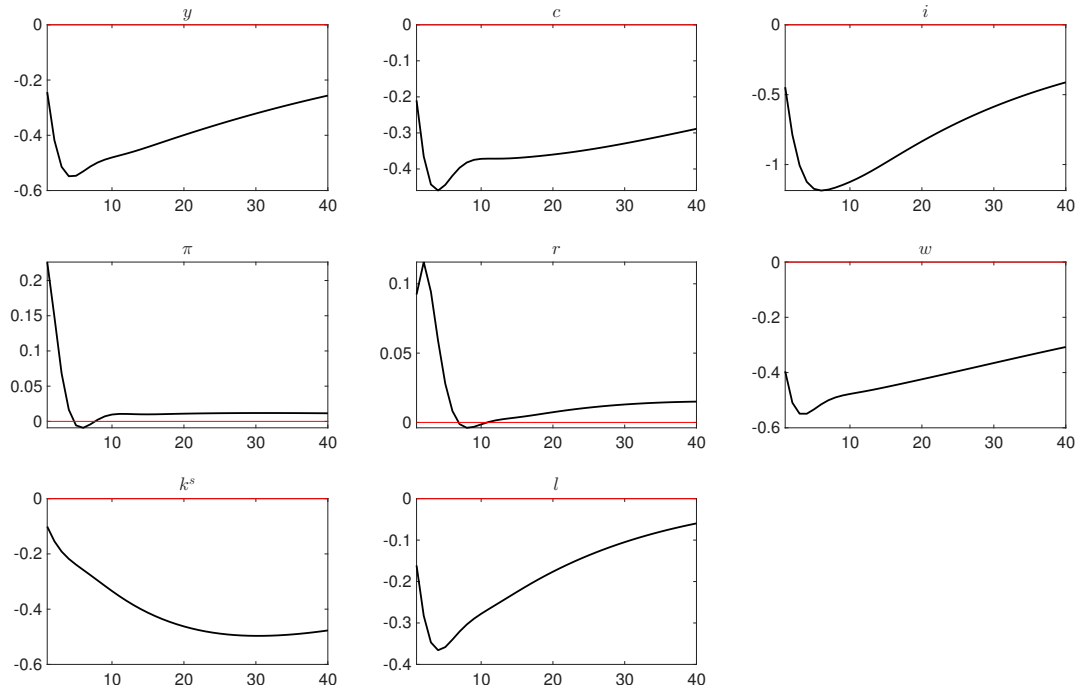


Figure 11: Impulse response functions (orthogonalized shock to η^p).

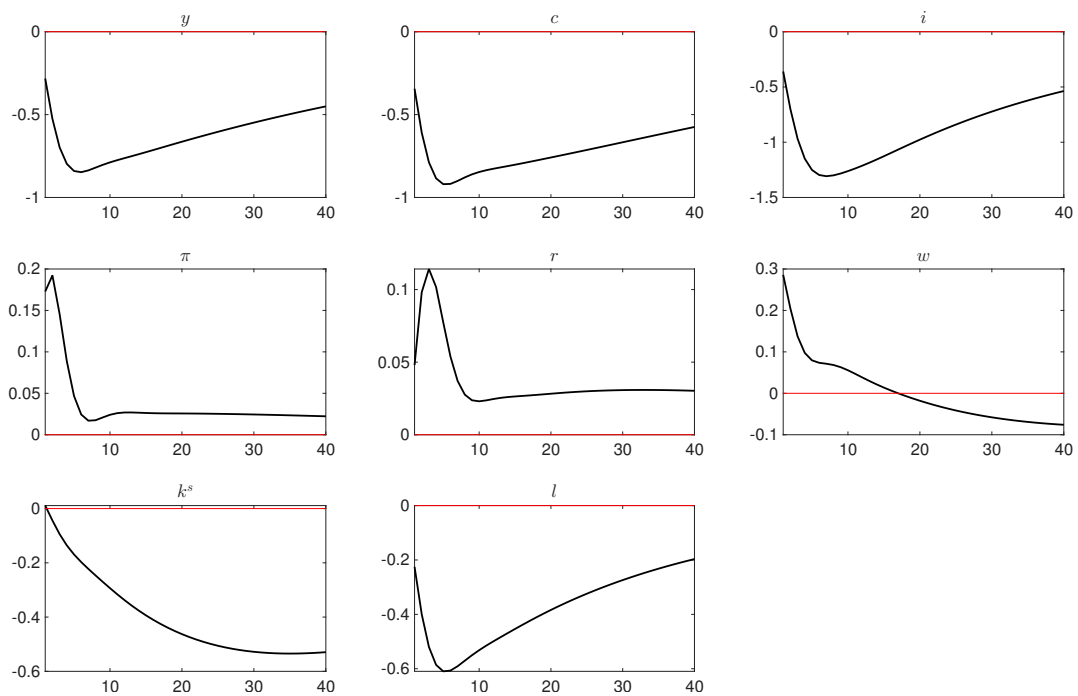


Figure 12: Impulse response functions (orthogonalized shock to η^w).

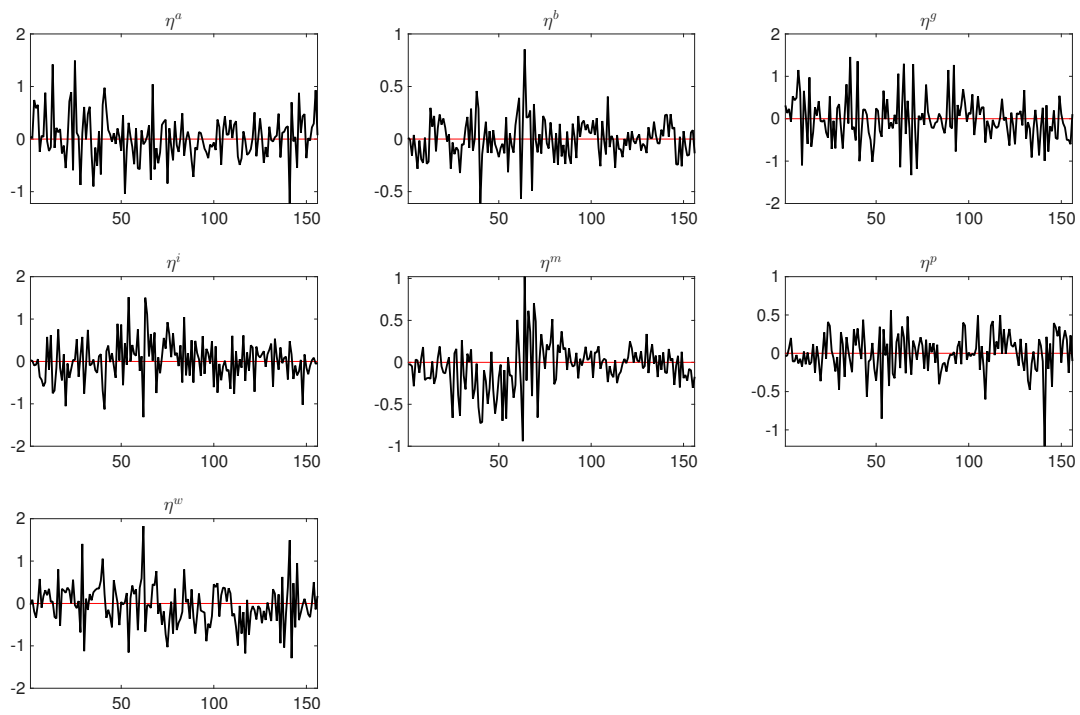


Figure 13: Smoothed shocks.