Table 1: Endogenous

Variable	LaTeX	Description
PIt	$\tilde{\pi}$	Inflation Rate
Pt	$\hat{P}$	Price Level
LAMt	$\tilde{\lambda}$	Real Marginal Cost
Ct	$\hat{C}$	Consumption
Lt	$\hat{L}$	Labor
Rt	$\hat{R}$	Interest Rate
Kt	$\hat{K}$	Capital
It	$\hat{I}$	Investment
Wt	$\hat{W}$	Wage
ZAt	$\hat{Z}^A$	Productivity
Yt	$\hat{Y}$	Production
ZMt	$\hat{Z}^M$	Monetary Policy

Table 2: Exogenous

Variable	LaTeX	Description
epsilonA	ε_A	productivity shock
epsilonM	ε_M	monetary shock

Table 3: Parameters

Variable	LaTeX	Description
SIGMA	σ	Relative Risk Aversion
PHI	ϕ	Labor Disutility Weight
VARPHI	φ	Marginal Disutility of Labor Supply
BETA	β	Intertemporal Discount Factor
DELTA	δ	Depreciation Rate
ALPHA	α	Output Elasticity of Capital
PSI	ψ	Elasticity of Substitution between Intermediate Goods
THETA	θ	Price Stickness Parameter
gammaR	γ_R	Interest-Rate Smoothing Parameter
gammaPI	γ_π	Interest-Rate Sensitivity to Inflation
gammaY	γ_Y	Interest-Rate Sensitivity to Product
rhoA	ρ_A	Autoregressive Parameter of Productivity Shock
rhoM	ρ_M	Autoregressive Parameter of Monetary Policy Shock
thetaC	θ_C	Consumption weight in Output
thetaI	θ_I	Investment weight in Output
sigmaA	σ_A	Productivity-Shock Standard Error

Table 3 – Continued

Variable	LaTeX	Description
sigmaM	σ_M	Monetary-Shock Standard Error

Table 4: Parameter Values

Parameter	**Value**	**Description**
σ	2.000	Relative Risk Aversion
ϕ	1.000	Labor Disutility Weight
φ	1.500	Marginal Disutility of Labor Supply
β	0.985	Intertemporal Discount Factor
δ	0.025	Depreciation Rate
α	0.350	Output Elasticity of Capital
ψ	8.000	Elasticity of Substitution between Intermediate Goods
θ	0.800	Price Stickness Parameter
γ_R	0.790	Interest-Rate Smoothing Parameter
γ_π	2.430	Interest-Rate Sensitivity to Inflation
γ_Y	0.160	Interest-Rate Sensitivity to Product
ρ_A	0.950	Autoregressive Parameter of Productivity Shock
ρ_M	0.900	Autoregressive Parameter of Monetary Policy Shock
θ_C	0.800	Consumption weight in Output
θ_I	0.200	Investment weight in Output
σ_A	0.010	Productivity-Shock Standard Error
σ_M	0.010	Monetary-Shock Standard Error

$$Ps = 1$$

$$PIs = 1$$

$$ZAs = 1$$

$$ZMs = 1$$

$$Rs = \frac{1}{\beta} - (1 - \delta)$$

$$LAMs = \frac{\psi - 1}{\psi}$$

$$Ws = (1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}$$

$$Ys = \left(\frac{(1 - \alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1 - \alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{(1 - \alpha) \frac{\psi-1}{\psi}} \right)^{\psi} \left(\frac{\frac{1}{\beta} - (1 - \delta)}{\frac{1}{\beta} - (1 - \delta) - \delta \alpha \frac{\psi-1}{\psi}} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}$$

$$Cs = \left(\frac{(1 - \alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{\frac{\psi-1}{\psi} (1 - \alpha) \left(\frac{(1-\alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1-\alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{(1-\alpha) \frac{\psi-1}{\psi}} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\delta \alpha \frac{\psi-1}{\psi}} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{(1 - \alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}} \right)^{\frac{1}{1-\alpha}}$$

$$Ks = \frac{\frac{\psi-1}{\psi} \alpha \left(\frac{(1-\alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1-\alpha) \left(\frac{\psi-1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{(1-\alpha) \frac{\psi-1}{\psi}} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\delta \alpha \frac{\psi-1}{\psi}} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{\frac{1}{\beta} - (1 - \delta)}$$

$$Ls = \frac{\frac{\psi-1}{\psi}\ (1-\alpha)\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\phi}\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{(1-\alpha)\,\frac{\psi-1}{\psi}} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\delta\,\alpha\,\frac{\psi-1}{\psi}} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{(1-\alpha)\ \left(\frac{\psi-1}{\psi}\ \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}$$

$$Is = \delta\ \frac{\frac{\psi-1}{\psi}\,\alpha\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\phi}\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{(1-\alpha)\,\frac{\psi-1}{\psi}} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\delta\,\alpha\,\frac{\psi-1}{\psi}} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{\frac{1}{\beta}-(1-\delta)}$$

$$RHO = \frac{1}{1+\frac{1}{\beta}-(1-\delta)}$$

$$\tilde{\pi}_t = \hat{P}_t - \hat{P}_{t-1} \tag{1}$$

$$\tilde{\pi}_t = \tilde{\pi}_{t+1}\,\frac{1}{1+\frac{1}{\beta}-(1-\delta)} + \frac{\tilde{\lambda}_t\ (1-\theta)\ \left(1-\theta\,\frac{1}{1+\frac{1}{\beta}-(1-\delta)}\right)}{\theta} \tag{2}$$

$$\varphi\,\hat{L}_t + \sigma\,\hat{C}_t = \hat{W}_t - \hat{P}_t \tag{3}$$

$$\hat{C}_{t+1} - \hat{C}_t = \frac{\left(\frac{1}{\beta}-(1-\delta)\right)\ \beta\ \left(\hat{R}_{t+1} - \hat{P}_{t+1}\right)}{\sigma} \tag{4}$$

$$\hat{K}_t = (1-\delta)\ \hat{K}_{t-1} + \delta\,\hat{I}_t \tag{5}$$

$$\tilde{\lambda}_t = \alpha\,\hat{R}_t + (1-\alpha)\ \hat{W}_t - \hat{Z}^A_t - \hat{P}_t \tag{6}$$

$$\hat{Y}_t = \hat{Z}^A_t + \alpha\,\hat{K}_{t-1} + (1-\alpha)\ \hat{L}_t \tag{7}$$

$$\hat{K}_{t-1} - \hat{L}_t = \hat{W}_t - \hat{R}_t \tag{8}$$

$$\hat{Y}_t = \hat{C}_t\,\theta_C + \hat{I}_t\,\theta_I \tag{9}$$

$$\hat{R}_t = \gamma_R\,\hat{R}_{t-1} + (1-\gamma_R)\ \left(\tilde{\pi}_t\,\gamma_\pi + \hat{Y}_t\,\gamma_Y\right) + \hat{Z}^M_t \tag{10}$$

$$\hat{Z}^A_t = \rho_A\,\hat{Z}^A_{t-1} + \varepsilon_{At} \tag{11}$$

$$\hat{Z}^M_t = \rho_M\,\hat{Z}^M_{t-1} + \varepsilon_{Mt} \tag{12}$$

$$Ps = 1$$

$$PIs = 1$$

$$ZAs = 1$$

$$ZMs = 1$$

$$Rs = Ps \left(\frac{1}{\beta} - (1 - \delta) \right)$$

$$LAMs = \frac{Ps \ (\psi - 1)}{\psi}$$

$$Ws = (1 - \alpha) \left(LAMs \, ZAs \left(\frac{\alpha}{Rs} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}$$

$$Ys = \left(\frac{Ws}{Ps \, \phi} \left(\frac{Ws}{(1 - \alpha) \ LAMs} \right)^{\psi} \left(\frac{Rs}{Rs - LAMs \, \delta \, \alpha} \right)^{\sigma} \right)^{\frac{1}{\psi + \sigma}}$$

$$Cs = \left(\frac{Ws}{Ps \, \phi} \left(\frac{LAMs \ (1 - \alpha) \ Ys}{Ws} \right)^{(-\psi)} \right)^{\frac{1}{\sigma}}$$

$$Ks = \frac{LAMs \, \alpha \, Ys}{Rs}$$

$$Ls = \frac{LAMs \ (1 - \alpha) \ Ys}{Ws}$$

$$Is = \delta \, Ks$$

$$RHO = \frac{1}{1 + Rs}$$

$$\tilde{\pi}_t = \hat{P}_t - \hat{P}_{t-1} \tag{13}$$

$$\tilde{\pi}_t = RHO \, \tilde{\pi}_{t+1} + \frac{\tilde{\lambda}_t \ (1 - \theta) \ (1 - RHO \, \theta)}{\theta} \tag{14}$$

$$\varphi \, \hat{L}_t + \sigma \, \hat{C}_t = \hat{W}_t - \hat{P}_t \tag{15}$$

$$\hat{C}_{t+1} - \hat{C}_t = \frac{Rs\,\beta\,\left(\hat{R}_{t+1} - \hat{P}_{t+1}\right)}{Ps\,\sigma} \tag{16}$$

$$\hat{K}_t = (1-\delta)\;\hat{K}_{t-1} + \delta\,\hat{I}_t \tag{17}$$

$$\tilde{\lambda}_t = \alpha\,\hat{R}_t + (1-\alpha)\;\hat{W}_t - \hat{Z}_t^A - \hat{P}_t \tag{18}$$

$$\hat{Y}_t = \hat{Z}_t^A + \alpha\,\hat{K}_{t-1} + (1-\alpha)\;\hat{L}_t \tag{19}$$

$$\hat{K}_{t-1} - \hat{L}_t = \hat{W}_t - \hat{R}_t \tag{20}$$

$$\hat{Y}_t = \hat{C}_t\,\theta_C + \hat{I}_t\,\theta_I \tag{21}$$

$$\hat{R}_t = \gamma_R\,\hat{R}_{t-1} + (1-\gamma_R)\;\left(\tilde{\pi}_t\,\gamma_\pi + \hat{Y}_t\,\gamma_Y\right) + \hat{Z}_t^M \tag{22}$$

$$\hat{Z}_t^A = \rho_A\,\hat{Z}_{t-1}^A + \varepsilon_{At} \tag{23}$$

$$\hat{Z}_t^M = \rho_M\,\hat{Z}_{t-1}^M + \varepsilon_{Mt} \tag{24}$$

$$Ps = 1$$

$$PIs = 1$$

$$ZAs = 1$$

$$ZMs = 1$$

$$Rs = \frac{1}{\beta} - (1 - \delta)$$

$$LAMs = \frac{\psi - 1}{\psi}$$

$$Ws = (1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}$$

$$Ys = \left(\frac{(1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\frac{\psi - 1}{\psi} (1 - \alpha)} \right)^{\psi} \left(\frac{\frac{1}{\beta} - (1 - \delta)}{\frac{1}{\beta} - (1 - \delta) - \frac{\psi - 1}{\psi} \delta \alpha} \right)^{\sigma} \right)^{\frac{1}{\psi + \sigma}}$$

$$Cs = \left(\frac{(1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{\frac{\psi - 1}{\psi} (1 - \alpha) \left(\frac{(1-\alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1-\alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\frac{\psi - 1}{\psi} (1 - \alpha)} \right)^{\psi} \left(\frac{\frac{1}{\beta} - (1 - \delta)}{\frac{1}{\beta} - (1 - \delta) - \frac{\psi - 1}{\psi} \delta \alpha} \right)^{\sigma} \right)^{\frac{1}{\psi + \sigma}}}{(1 - \alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}} \right)$$

$$Ks = \frac{\frac{\psi - 1}{\psi} \alpha \left(\frac{(1-\alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\phi} \left(\frac{(1-\alpha) \left(\frac{\psi - 1}{\psi} \left(\frac{\alpha}{\frac{1}{\beta} - (1 - \delta)} \right)^{\alpha} \right)^{\frac{1}{1-\alpha}}}{\frac{\psi - 1}{\psi} (1 - \alpha)} \right)^{\psi} \left(\frac{\frac{1}{\beta} - (1 - \delta)}{\frac{1}{\beta} - (1 - \delta) - \frac{\psi - 1}{\psi} \delta \alpha} \right)^{\sigma} \right)^{\frac{1}{\psi + \sigma}}}{\frac{1}{\beta} - (1 - \delta)}$$

$$Ls = \frac{\frac{\psi-1}{\psi}\ (1-\alpha)\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\phi}\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\frac{\psi-1}{\psi}\,(1-\alpha)} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\frac{\psi-1}{\psi}\,\delta\,\alpha} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{(1-\alpha)\ \left(\frac{\psi-1}{\psi}\ \left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}$$

$$Is = \delta\ \frac{\frac{\psi-1}{\psi}\,\alpha\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\phi}\ \left(\frac{(1-\alpha)\left(\frac{\psi-1}{\psi}\left(\frac{\alpha}{\frac{1}{\beta}-(1-\delta)}\right)^{\alpha}\right)^{\frac{1}{1-\alpha}}}{\frac{\psi-1}{\psi}\,(1-\alpha)} \right)^{\psi} \left(\frac{\frac{1}{\beta}-(1-\delta)}{\frac{1}{\beta}-(1-\delta)-\frac{\psi-1}{\psi}\,\delta\,\alpha} \right)^{\sigma} \right)^{\frac{1}{\psi+\sigma}}}{\frac{1}{\beta}-(1-\delta)}$$

$$RHO = \frac{1}{1+\frac{1}{\beta}-(1-\delta)}$$

$$\tilde{\pi} = 0 \tag{25}$$

$$\tilde{\pi} = \frac{1}{1+\frac{1}{\beta}-(1-\delta)}\,\tilde{\pi} + \frac{\tilde{\lambda}\ (1-\theta)\ \left(1-\frac{1}{1+\frac{1}{\beta}-(1-\delta)}\,\theta\right)}{\theta} \tag{26}$$

$$\varphi\,\hat{L} + \sigma\,\hat{C} = \hat{W} - \hat{P} \tag{27}$$

$$0 = \frac{\left(\frac{1}{\beta}-(1-\delta)\right)\ \beta\ \left(\hat{R}-\hat{P}\right)}{\sigma} \tag{28}$$

$$\hat{K} = (1-\delta)\ \hat{K} + \delta\,\hat{I} \tag{29}$$

$$\tilde{\lambda} = \alpha\,\hat{R} + (1-\alpha)\ \hat{W} - \hat{Z}^{A} - \hat{P} \tag{30}$$

$$\hat{Y} = \hat{Z}^{A} + \alpha\,\hat{K} + (1-\alpha)\ \hat{L} \tag{31}$$

$$\hat{K} - \hat{L} = \hat{W} - \hat{R} \tag{32}$$

$$\hat{Y} = \hat{C}\,\theta_{C} + \hat{I}\,\theta_{I} \tag{33}$$

$$\hat{R} = \hat{R}\,\gamma_{R} + (1-\gamma_{R})\ \left(\tilde{\pi}\,\gamma_{\pi} + \hat{Y}\,\gamma_{Y}\right) + \hat{Z}^{M} \tag{34}$$

$$\hat{Z}^{A} = \hat{Z}^{A}\,\rho_{A} + \varepsilon_{A} \tag{35}$$

$$\hat{Z}^{M} = \hat{Z}^{M}\,\rho_{M} + \varepsilon_{M} \tag{36}$$

$$\tilde{\pi} = 0 \tag{37}$$

$$\hat{P} = 0 \tag{38}$$

$$\tilde{\lambda} = 0 \tag{39}$$

$$\hat{C} = 0 \tag{40}$$

$$\hat{L} = 0 \tag{41}$$

$$\hat{R} = 0 \tag{42}$$

$$\hat{K} = 0 \tag{43}$$

$$\hat{I} = 0 \tag{44}$$

$$\hat{W} = 0 \tag{45}$$

$$\hat{Z}^A = 0 \tag{46}$$

$$\hat{Y} = 0 \tag{47}$$

$$\hat{Z}^M = 0 \tag{48}$$