Table 1: Endogenous

Variable	LaTeX	Description
U	U	Utility function
UC	UC	Marginal utility of consumption
UH	UH	Marginal utility of labor
LAMBDA	λ	Stochastic discount factor
R	R	Risk free interest rate
RK	R^K	Return on capital
C	C	Consumption
W	W	Real wage
H	H	Hours
Y	Y	Output
K	K	Capital
I	I	Investment
A	A	Technology
G	G	Government spending
tax	T	Tax
X	X	Gross investment growth rate
Q	Q	Tobin s Q
Z1	$Z1$	Tobin s Q - auxiliary variable
KY	$\frac{\bar{K}}{\bar{Y}}$	Capital output ratio in steady state
IY	$\frac{\bar{I}}{\bar{Y}}$	Investment output ratio in steady state
CY	$\frac{\bar{C}}{\bar{Y}}$	Consumption output ratio in steady state
RR	RR	Risk free interest rate - deviation from the steady state
YY	YY	Output - deviation from the steady state
CC	CC	Consumption - deviation from the steady state
HH	HH	Hours - deviation from the steady state
WW	WW	Real wage - deviation from the steady state
II	II	Investment - deviation from the steady state
KK	KK	Capital - deviation from the steady state

Table 2: Exogenous

Variable	LaTeX	Description
epsA	ϵ^A	Labor augmenting shock
epsG	ϵ^G	Government spending shock

Table 3: Parameters

Variable	**LaTeX**	**Description**
`varrho`	ϱ	Weight on Leisure in utility
`chii`	χ	Habit Parameter
`alp`	α	Labor share
`betta`	β	Discount factor
`delta`	δ	Capital depreciation
`sigma_c`	σ_C	Inverse of the elasticity of substitution
`rhoA`	ρ_A	Persistence of labor augmentig shock
`rhoG`	ρ_G	Persistence of government spending shock
`sigma`	σ	Shock scaling parameter
`phiX`	ϕ^X	Investment Adjustment costs
`H_bar`	$\bar{H}$	Steady state hours
`A_bar`	$\bar{A}$	Steady state technology
`cy`	$\frac{\bar{C}}{\bar{Y}}$	Consumption output ratio in steady state
`iy`	$\frac{\bar{I}}{\bar{Y}}$	Investment output ratio in steady state
`gy`	$\frac{\bar{G}}{\bar{Y}}$	Government output ratio

Table 4: Parameter Values

Parameter	**Value**	**Description**
ϱ	0.684	Weight on Leisure in utility
χ	0.500	Habit Parameter
α	0.700	Labor share
β	0.990	Discount factor
δ	0.020	Capital depreciation
σ_C	2.000	Inverse of the elasticity of substitution
ρ_A	0.750	Persistence of labor augmentig shock
ρ_G	0.750	Persistence of government spending shock
σ	1.000	Shock scaling parameter
ϕ^X	2.000	Investment Adjustment costs
$\bar{H}$	0.350	Steady state hours
$\bar{A}$	1.000	Steady state technology
$\frac{\bar{C}}{\bar{Y}}$	0.600	Consumption output ratio in steady state
$\frac{\bar{I}}{\bar{Y}}$	0.200	Investment output ratio in steady state
$\frac{\bar{G}}{\bar{Y}}$	0.200	Government output ratio

$$U_t = \frac{\left(\left(C_t - \chi\, C_{t-1}\right)^{1-\varrho}\, \left(1 - H_t\right)^{\varrho}\right)^{1-\sigma_C} - 1}{1 - \sigma_C} \tag{1}$$

$$UC_t = \left(1 - \varrho\right)\, \left(C_t - \chi\, C_{t-1}\right)^{\left(1-\varrho\right)\left(1-\sigma_C\right)-1}\, \left(1 - H_t\right)^{\varrho\left(1-\sigma_C\right)} \tag{2}$$

$$UH_t = \left(-\varrho\right)\, \left(C_t - \chi\, C_{t-1}\right)^{\left(1-\varrho\right)\left(1-\sigma_C\right)}\, \left(1 - H_t\right)^{\varrho\left(1-\sigma_C\right)-1} \tag{3}$$

$$UC_t = \beta\, R_t\, UC_{t+1} \tag{4}$$

$$\frac{\left(-UH_t\right)}{UC_t} = W_t \tag{5}$$

$$Y_t = \left(H_t\, A_t\right)^{\alpha}\, K_{t-1}^{1-\alpha} \tag{6}$$

$$\frac{Y_t\, \alpha}{H_t} = W_t \tag{7}$$

$$Y_t = C_t + G_t + I_t \tag{8}$$

$$K_t = I_t\, \left(1 - \phi^X\, \left(X_t - 1\right)^2\right) + K_{t-1}\, \left(1 - \delta\right) \tag{9}$$

$$X_t = \frac{I_t}{I_{t-1}} \tag{10}$$

$$\lambda_t = \frac{UC_t\, \beta}{UC_{t-1}} \tag{11}$$

$$Z1_t = \lambda_t\, \left(X_t - 1\right)\, 2\, \phi^X\, X_t^2\, Q_t \tag{12}$$

$$Q_t\, \left(1 - \phi^X\, \left(X_t - 1\right)^2 - \left(X_t - 1\right)\, \phi^X\, 2\, X_t\right) + Z1_{t+1} = 1 \tag{13}$$

$$R^K{}_t = \frac{\frac{Y_t\, \left(1-\alpha\right)}{K_{t-1}} + \left(1 - \delta\right)\, Q_t}{Q_{t-1}} \tag{14}$$

$$\lambda_{t+1}\, R^K{}_{t+1} = R_t\, \lambda_{t+1} \tag{15}$$

$$G_t = H_t\, W_t\, T_t \tag{16}$$

$$\log\left(A_t\right) - \log\left(\left(\bar{A}\right)\right) = \rho_A\, \left(\log\left(A_{t-1}\right) - \log\left(\left(\bar{A}\right)\right)\right) + \sigma\, \epsilon^A{}_t \tag{17}$$

$$\log\left(G_t\right) - \log\left(\left(\bar{G}\right)\right) = \rho_G\,\left(\log\left(G_{t-1}\right) - \log\left(\left(\bar{G}\right)\right)\right) + \sigma\,{\epsilon^G}_t \tag{18}$$

$$YY_t = \frac{Y_t}{\left(\bar{Y}\right)} \tag{19}$$

$$KK_t = \frac{K_t}{\left(\bar{K}\right)} \tag{20}$$

$$II_t = \frac{I_t}{\left(\bar{I}\right)} \tag{21}$$

$$CC_t = \frac{C_t}{\left(\bar{C}\right)} \tag{22}$$

$$WW_t = \frac{W_t}{\left(\bar{W}\right)} \tag{23}$$

$$HH_t = \frac{H_t}{\left(\bar{H}\right)} \tag{24}$$

$$RR_t = \frac{R_t}{\left(\bar{R}\right)} \tag{25}$$

$$\frac{\bar{K}}{\bar{Y}}_t = \frac{K_t}{Y_t} \tag{26}$$

$$\frac{\bar{I}}{\bar{Y}}_t = \frac{I_t}{Y_t} \tag{27}$$

$$\frac{\bar{C}}{\bar{Y}}_t = \frac{C_t}{Y_t} \tag{28}$$

$$U=\frac{\left(\left(C-C\,\chi\right)^{1-\varrho}\,\left(1-H\right)^{\varrho}\right)^{1-\sigma_C}-1}{1-\sigma_C} \tag{29}$$

$$UC=\left(1-\varrho\right)\,\left(C-C\,\chi\right)^{\left(1-\varrho\right)\,\left(1-\sigma_C\right)-1}\,\left(1-H\right)^{\varrho\,\left(1-\sigma_C\right)} \tag{30}$$

$$UH=\left(-\varrho\right)\,\left(C-C\,\chi\right)^{\left(1-\varrho\right)\,\left(1-\sigma_C\right)}\,\left(1-H\right)^{\varrho\,\left(1-\sigma_C\right)-1} \tag{31}$$

$$UC=UC\,\beta\,R \tag{32}$$

$$\frac{\left(-UH\right)}{UC}=W \tag{33}$$

$$Y=\left(H\,A\right)^{\alpha}\,K^{1-\alpha} \tag{34}$$

$$\frac{Y\,\alpha}{H}=W \tag{35}$$

$$Y=C+G+I \tag{36}$$

$$K=I\,\left(1-\phi^{X}\,\left(X-1\right)^2\right)+K\,\left(1-\delta\right) \tag{37}$$

$$X=1 \tag{38}$$

$$\lambda=\beta \tag{39}$$

$$Z1=\lambda\,\left(X-1\right)\,2\,\phi^{X}\,X^2\,Q \tag{40}$$

$$Z1+Q\,\left(1-\phi^{X}\,\left(X-1\right)^2-\left(X-1\right)\,\phi^{X}\,2\,X\right)=1 \tag{41}$$

$$R^{K}=\frac{\frac{Y\,\left(1-\alpha\right)}{K}+\left(1-\delta\right)\,Q}{Q} \tag{42}$$

$$\lambda\,R^{K}=R\,\lambda \tag{43}$$

$$G=H\,W\,T \tag{44}$$

$$\log\left(A\right)-\log\left(\left(A\right)\right)=\left(\log\left(A\right)-\log\left(\left(A\right)\right)\right)\,\rho_A+\sigma\,\epsilon^{A} \tag{45}$$

$$\log\left(G\right)-\log\left(\left(G\right)\right)=\left(\log\left(G\right)-\log\left(\left(G\right)\right)\right)\,\rho_G+\sigma\,\epsilon^{G} \tag{46}$$

$$YY = \frac{Y}{(Y)} \tag{47}$$

$$KK = \frac{K}{(K)} \tag{48}$$

$$II = \frac{I}{(I)} \tag{49}$$

$$CC = \frac{C}{(C)} \tag{50}$$

$$WW = \frac{W}{(W)} \tag{51}$$

$$HH = \frac{H}{(H)} \tag{52}$$

$$RR = \frac{R}{(R)} \tag{53}$$

$$\frac{\bar{K}}{\bar{Y}} = \frac{K}{Y} \tag{54}$$

$$\frac{\bar{I}}{\bar{Y}} = \frac{I}{Y} \tag{55}$$

$$\frac{\bar{C}}{\bar{Y}} = \frac{C}{Y} \tag{56}$$