List of (Log)Linearized equations

- IS-curve

$$\begin{aligned}&\left(1+\Phi\tilde{\gamma}^{-1}\right)\hat{y}_t = \tilde{g}_t\left(1+\Phi\tilde{\gamma}^{-1}-\rho_g\right)+\Phi\tilde{\gamma}^{-1}\left(\hat{y}_{t-1}-\tilde{g}_{t-1}\right)\\&-\left(1-\Phi\tilde{\gamma}^{-1}\right)\left[\tilde{R}_t - E_t[\tilde{\pi}_{t+1}]+(\rho_d-1)d_t\right]+E_t[\hat{y}_{t+1}]-\left(\rho_a-\Phi\tilde{\gamma}^{-1}\right)a_t;\end{aligned} \tag{1}$$

- Phillips curve

$$(1+\beta)\tilde{\pi}_t = \kappa(1-\Phi\tilde{\gamma}^{-1})^{-1}\left[\hat{y}_t-\tilde{g}_t-\Phi\tilde{\gamma}^{-1}[\hat{y}_{t-1}-\tilde{g}_{t-1}-a_t]\right]+\kappa\mu_t+\tilde{\pi}_{t-1}-\beta E_t[\tilde{\pi}_{t+1}]; \tag{2}$$

- Natural Level of output

$$\hat{y}^n_t = \tilde{g}_t + \Phi\tilde{\gamma}^{-1}(\hat{y}^n_{t-1}-\tilde{g}_{t-1}-a_t)-(1-\Phi\tilde{\gamma}^{-1})\mu_t; \tag{3}$$

- Monetary policy rule

$$\tilde{R}_t = \rho_R(\xi_t)\tilde{R}_{t-1}+\rho_R(\xi_t)[\psi_\pi(\xi_t)\tilde{\pi}_t+\psi_y(\xi_t)\tilde{y}_t]+\sigma_R\epsilon_{R,t} \tag{4}$$

- Total governement purchases

$$\tilde{g}_t = \rho_g\tilde{g}_{t-1}+(1-\rho_g)\phi_{e^S}\tilde{e}^S_{t-1}+\sigma_g\epsilon_{g,t} \tag{5}$$

- Fiscal Rule

$$\tilde{\tau}_t = \rho_\tau(\xi_t)\tilde{\tau}_{t-1}+(1-\rho_\tau(\xi_t))\left[\delta_b(\xi_t)\tilde{b}^m_{t-1}+\delta_e\tilde{e}_t\right]+\delta_y(\hat{y}_{t-1}-\hat{y}^n_{t-1})+\sigma_\tau\epsilon_{\tau,t} \tag{6}$$

- debt

$$\tilde{b}^m_t = \beta^{-1}\tilde{b}^m_t+b^m\beta^{-1}(\hat{R}^m_{t-1,t}-\hat{\pi}_t-\hat{y}_t+\hat{y}_{t-1}-a_t)-\tilde{\tau}_t+\tilde{e}_t+\tilde{tp}_t; \tag{7}$$

- return of the long term bond

$$\tilde{R}^m_{t,t+1} = R^{-1}\rho\hat{P}^m_{t+1}-\tilde{P}^m_t \tag{8}$$

- No arbitrage:

$$\tilde{R}_t = E_t\left[\tilde{R}^m_{t,t+1}\right] \tag{9}$$

- Expenditure, short term component:

$$\tilde{e}^S_t = \rho_{e^S}\tilde{e}^S_{t-1}+(1-\rho_{e^S})\phi_y(\hat{y}_{t-1}-\hat{y}^n_{t-1})+\sigma_{e^S}\epsilon_{e^S,t} \tag{10}$$

- Long Term Component:

$$\tilde{e}_t^L = \rho_{e^L} \tilde{e}_{t-1}^L + \sigma_{e^L} \epsilon_{e^L,t} \tag{11}$$

- Term Premium:

$$\tilde{tp}_t = \rho_{tp^L} \tilde{tp}_{t-1} + \sigma_{tp} \epsilon_{tp,t} \tag{12}$$

- Technology:

$$a_t = \rho_a a_{t-1} + \sigma_a \epsilon_{a,t} \tag{13}$$

- Demand Shock:

$$d_t = \rho_a d_{t-1} + \sigma_d \epsilon_{d,t} \tag{14}$$

- Markup Shock:

$$\mu_t = \rho_\mu \mu_{t-1} + \sigma_\mu \epsilon_{\mu,t} \tag{15}$$