$$V(k_t, b_{t-1}) = \max_{c_t, n_t, x_t, k_{t+1}, b_t} \left\{ u\left(c_{t,} 1 - n_t\right) + \beta EV(k_{t+1}, b_t) \right\}$$

Subject to;

$$c_t + \mathrm{k}_{t+1} + p_t b_t \leq w_t n_t + r_t k_t + (1\text{-}\delta)\mathrm{k}_\mathrm{t} + b_{t-1}$$

First order conditions;

$$\frac{\delta L}{\delta c_t} = u_{c_t} + \lambda_t(-1) = 0$$

$$\frac{\delta L}{\delta n_t} = u_{n_t}(-1) + \lambda_t(w_t) = 0$$

$$\frac{\delta L}{\delta k_t} = \beta EV_{k_{t+1}} + \lambda_t(-1) = 0$$

$$\frac{\delta L}{\delta b_t} = \beta EV_{b_t} + \lambda_t(-p_t) = 0$$

$$\frac{\delta L}{\delta \lambda_\mathrm{t}} = w_t n_t + r_t k_t + (1\text{-}\delta)\mathrm{k}_\mathrm{t} + b_{t-1} - c_t - \mathrm{k}_{t+1} - p_t b_t = 0$$

Envelope theorem conditions;

$$V_{k_t} = \lambda_t(r_t + (1 - \delta))$$
$$V_{k_t+1} = \lambda_{t+1}(r_{t+1} + (1 - \delta))$$

$$V_{b_{t-1}} = \lambda_t$$
$$V_{b_t} = \lambda_{t+1}$$

Euler equations;

$$u_{n_t} = u_{c_t}(w_t)$$
$$\beta E\left[u_{c_t+1}(r_{t+1} + (1 - \delta))\right] = u_{c_t}$$
$$\beta E\left[u_{c_t+1}\right] = p_t u_{c_t}$$

Firm conditions;

$$y_t = z_t {k_t}^\theta {n_t}^{1-\theta}$$

$$w_t = (1 - \theta) z_t {k_t}^\theta {n_t}^{-\theta}$$

$$r_t = \theta z_t {k_t}^{\theta - 1} {n_t}^{1-\theta}$$

Equations for Dynare, for home and foreign country;
15 equations (7 equations for each country, seen below and 1 equation for bond market clearing)

$$\frac{a}{1-n_t} = -\frac{1}{c_{t,}}\mathrm{w_t}$$

$$\beta E\left[\frac{1}{c_{t+1}}(\mathrm{r_{t+1}} + (1-\delta))\right] = \frac{1}{c_t}$$

$$\beta E\left[\frac{1}{c_{t+1}}\right] = \frac{1}{c_t}\mathrm{p_t}$$

$$w_t = (1-\theta)z_t {k_t}^{\theta} {n_t}^{-\theta}$$

$$r_t = \theta z_t {k_t}^{\theta-1} {n_t}^{1-\theta}$$

$$\mathrm{z}_t = \rho \mathrm{z_{t\text{-}1}} + \eta \mathrm{z^*{}_{t\text{-}1}} + \epsilon$$

$$c_t + \mathrm{k}_{t+1} + p_t b_t \leq w_t n_t + r_t k_t + (1\text{-}\delta)\mathrm{k_t} + b_{t-1}$$

$$b_t + b^*{}_t \ = \ 0$$