1 System of equations

Main features

- 2 sectors: tradable (T) + non-tradable(N)
- 2 workers: 1,2
- Workers consume, supply labor and save in foreign bonds
- Perfect labor mobility for each worker type between T-NT sectors
- shock: price of the endowment: "p^{Co}"
- Fraction "1-μ" of the endowment goes for worker "1", fraction μ goes for worker "2"

Euler equations:

$$\left[c_{1,t} - \frac{1}{\omega}\left(n_{1,t}\right)^{\omega}\right]^{-\sigma} = \beta \mathbb{E}_t \left\{ \left[c_{1,t+1} - \frac{1}{\omega}\left(n_{1,t+1}\right)^{\omega}\right]^{-\sigma} \frac{p_t}{p_{t+1}} \left(1 + R_t\right) \right\} \qquad \text{(Eq.1)}$$

$$\left[c_{2,t} - \frac{1}{\omega}\left(n_{2,t}\right)^{\omega}\right]^{-\sigma} = \beta \mathbb{E}_t \left\{ \left[c_{2,t+1} - \frac{1}{\omega}\left(n_{2,t+1}\right)^{\omega}\right]^{-\sigma} \frac{p_t}{p_{t+1}} \left(1 + R_t\right) \right\} \qquad \text{(Eq.2)}$$

Budget constraints:

$$c_{1,t} + \left(1 + R_{t-1}\right) d_{1,t-1} = \alpha_T \frac{Y_t^T}{N_{1,t}^T} n_{1,t} + d_{1,t} + (1-\mu) p_t^{Co} y^{Co} \qquad \text{(Eq.3)}$$

$$c_{2,t} + \left(1 + R_{t-1}\right) d_{2,t-1} = \left(1 - \alpha_T\right) \frac{Y_t^T}{N_{2,t}^T} n_{2,t} + d_{2,t} + \mu p_t^{Co} y^{Co} \qquad \text{(Eq.4)}$$

Consumption aggregation:

$$c_{1,t}^N = \varphi \left(\frac{p_{N,t}}{p_t}\right)^{-\chi} c_{1,t} \tag{Eq.5}$$

$$c_{1,t}^N = \varphi \left(\frac{p_{N,t}}{p_t}\right)^{-\chi} c_{2,t} \tag{Eq.6}$$

$$c_{1,t}^T = (1-\varphi) \left(\frac{1}{p_t}\right)^{-\chi} c_{1,t} \tag{Eq.7}$$

$$c_{2,t}^T = (1-\varphi) \left(\frac{1}{p_t}\right)^{-\chi} c_{2,t} \tag{Eq.8}$$

$$C_t = c_{1,t} + c_{2,t} \tag{Eq.9}$$

$$C_t^N = c_{1,t}^N + c_{2,t}^N \tag{Eq.10}$$

$$C_t^T = c_{1,t}^T + c_{2,t}^T \tag{Eq.11}$$

$$p_t = \left[\varphi \left(p_{N,t}\right)^{1-\chi} + (1-\varphi)\right]^{\frac{1}{1-\chi}} \tag{Eq.12}$$

Production functions and optimality conditions :

$$Y_t^T = \left(N_{1,t}^T\right)^{\alpha_T} \left(N_{2,t}^T\right)^{1-\alpha_T} \tag{Eq.13}$$

$$Y_t^N = \left(N_{1,t}^N\right)^{\alpha_N} \left(N_{2,t}^N\right)^{1-\alpha_N} \tag{Eq.14}$$

$$\left(n_{1,t}\right)^{\omega-1} = \alpha_T \frac{Y_t^T}{N_{1,t}^T} \frac{1}{p_t} \tag{Eq.15}$$

$$\left(n_{1,t}\right)^{\omega-1} = \alpha_N \frac{Y_t^N}{N_{1,t}^N} \frac{p_{N,t}}{p_t} \tag{Eq.16}$$

$$\left(n_{2,t}\right)^{\omega-1} = (1-\alpha_T) \frac{Y_t^T}{N_{2,t}^T} \frac{1}{p_t} \tag{Eq.17}$$

$$\left(n_{2,t}\right)^{\omega-1} = (1-\alpha_N) \frac{Y_t^N}{N_{2,t}^N} \frac{p_{N,t}}{p_t} \tag{Eq.18}$$

Interest rate

$$R_t = r + \psi \left(e^{d_{1,t}+d_{2,t}-d_1-d_2} - 1\right) \tag{Eq.19}$$

Market clearing

$$Y_t^N = C_t^N \tag{Eq.20}$$

Labor market clearing:

$$n_{1,t} = N_{1,t}^T + N_{1,t}^N \tag{Eq.21}$$

$$n_{2,t} = N_{2,t}^T + N_{2,t}^N \tag{Eq.22}$$

Exogenous variables

$$\ln\left(p_t^{Co}\right) = (1-\rho_{co}) \ln\left(p_{t-1}^{Co}\right) + \rho_{co} \ln\left(p_t^{Co}\right) + \epsilon_{p^{co}} \tag{Eq.23}$$