Competitive equilibrium is defined by the following equations:

Demand equation for the flexible price sector household

$$C_t^f = x_{f,t} y_{f,t} - x_{f,t} C_*$$
(52)

Supply equation of flexible price sector (food sector) firm

$$x_{f,t} = \phi_n (y_{f,t})^\psi (C_t^f)^\sigma (A_{f,t})^{-(1+\psi)}$$
(53)

Demand equation for sticky price sector household

$$C_t^s = x_{s,t} y_{s,t} - x_{f,t} C^*$$
(54)

Supply Equation of sticky price sector (non-food sector) firm

$$x_t x_{s,t} = \frac{\theta}{\theta - 1} \frac{E_t \left[\sum_{j=0}^1 (\alpha\beta)^j Q_{t,t+j} \left(\frac{P_{s,t}}{P_{s,t+j}} \right)^{-\sigma} Y_{s,t+j} \left(\frac{P_{t+j}}{P_t} \right) MC_{t+j}^r(z) \right]}{E_t \left[\sum_{j=0}^1 (\alpha\beta)^j Q_{t,t+j} \left(\frac{P_{s,t}}{P_{s,t+j}} \right)^{-\theta} Y_{s,t+j} \right]}$$
(55)

Price Index in sticky price good sector

$$1 = \left[\alpha (\Pi_{s,t})^{-(1-\theta)} + (1-\alpha) x_t^{1-\theta} \right]^{\frac{1}{1-\theta}}$$
(56)

Real marginal cost in the sticky price sector

$$MC_t^r(z) = \phi_n (y_{s,t}(z))^\psi (C_t^s)^\sigma (A_{s,t})^{-(1+\psi)} = \phi_n ((x_t)^{-\sigma} Y_{s,t})^\psi (C_t^s)^\sigma (A_{s,t})^{-(1+\psi)}$$
(57)

Market clearing equation for flexible price good

$$Y_{f,t} = \lambda y_{f,t} = C_{f,t} = \gamma (x_{f,t})^{-\eta} C_t + (1+\lambda) C^*$$
(58)

Market clearing condition for sticky price good

$$Y_{s,t} = C_{s,t} = (1-\gamma)(x_{s,t})^{-\eta} C_t$$
(59)

Aggregate Price Index

$$1 = \left[\gamma(x_{f,t})^{1-\eta} + (1-\gamma)(x_{s,t})^{1-\eta}\right]^{\frac{1}{1-\eta}} \tag{60}$$

Relation between headline and sticky price index

$$x_{s,t} = \frac{\Pi_{s,t} x_{s,t-1}}{\Pi_t} \tag{61}$$

Aggregation equation

$$\lambda C_t^f + C_t^s = C_t + G_t = Y_t \tag{62}$$

Monetary Policy Rule

$$ln\frac{R_t}{R} = \rho_i ln\left(\frac{R_{t-1}}{R}\right) + \rho_\pi ln\left(\frac{\pi_t}{\pi}\right) + \rho_y ln\left(\frac{Y_t}{Y}\right) + \rho_B ln\left(\frac{B_{g,t}}{B}\right) + \omega_t \tag{65}$$

Food Productivity Process

$$ln(A_t^f) = \rho_{af} ln(A_{f,t}) + \xi_t^{af} \tag{66}$$

Non Food Productivity Process

$$ln(A_t^s) = \rho_{as} A_{s,t} + \nu_t^{as} \tag{67}$$

Monetary Policy Shock

$$ln(\omega_t) = \rho_\omega ln(\omega_{t-1}) + \epsilon_t^{\omega} \tag{69}$$