$$Y^s = C^s + DB^b + TB^s \tag{1}$$

$$Y^s = w\,L^s + \Pi^{local}_{banks} + GiftFromBorrowers \tag{2}$$

$$GiftFromBorrowers = \frac{\chi^b\,NetWorth_b}{chi\_s}\,(NetWorthShock - 1) \tag{3}$$

$$NetWorthShock = NetWorthShock^{\rho(e^N W)}\,exp\left(e\_NW\,\sigma(e^N W)\right) \tag{4}$$

$$\Pi^{local}_{banks} = (-b^s)\,\left(\frac{1}{R^s} - \frac{1}{R^b}\right) \tag{5}$$

$$DB^b = b^b - \frac{b^b}{R^b} \tag{6}$$

$$DB^b = b^s - \frac{b^s}{R^s} \tag{7}$$

$$TB^b = b^{b*} - \frac{b^{b*}}{R^{b*}} \tag{8}$$

$$TB^s = b^{s*} - \frac{b^{s*}}{R^{s*}} \tag{9}$$

$$\delta = p\delta^{1-\rho(e^\delta)}\,\delta^{\rho(e^\delta)}\,exp\left(e\_delta\,\sigma(e^\delta)\right) \tag{10}$$

$$K_b = I^b + K_b\,(1-\delta) \tag{11}$$

$$R_k = \frac{q + (1-\delta)\,Q_k}{Q_k} \tag{12}$$

$$I_{AC} = 0 \tag{13}$$

$$I_{MC} = 0 \tag{14}$$

$$R_i = \frac{1}{beta\_b} \tag{15}$$

$$Q_k = I_{MC} + 1 + I_{AC} - m_b\,I_{MC} \tag{16}$$

$$1 = R^s\,m_s \tag{17}$$

$$1 = m_R EP \, R^{REP}_{Euler} \tag{18}$$

$$1 = m_b \, R^{b}_{Euler} \tag{19}$$

$$1 = m_b \, R_k \tag{20}$$

$$\Theta = K2Cltr\_BAR^{1-rho\_K2Cltr} \, \Theta^{rho\_K2Cltr} \tag{21}$$

$$b^{\bar{b}*} = K2Cltr\_f \, K2f \, K\_b\_BAR \tag{22}$$

$$\bar{b} = \Theta \, \left(K\_b\_BAR \, ConstantBorrowingLimit + (1 - ConstantBorrowingLimit) \, \left(K_b \, Q_k \, (1 - BorrowingLimitwithoutCapitalPrice) + K_b \, BorrowingLimitwithoutCapitalPrice\right) - K2f \, K\_b\_BAR\right) \tag{23}$$

$$b^{\bar{s}*} = (-b^s) \, Depo2Cltr\_f \tag{24}$$

$$ShocktoSpreadR_b = {ShocktoSpreadR_b}^{\rho(e^{Spread})} \, exp\left(e\_Spread \, \sigma(e^{Spread})\right) \tag{25}$$

$$\pi - \left(\bar{\Pi} - 1\right) = \kappa \, \hat{MC} + beta\_b \, \left(E[\Pi] - \bar{\Pi}\right) \tag{26}$$

$$Z = Z\_BAR^{1-\rho(e^Z)} \, Z^{\rho(e^Z)} \, exp\left(e\_Z \, \sigma(e^Z)\right) \tag{27}$$

$$MC = \left(\frac{q}{\alpha}\right)^{\alpha} \, \left(\frac{w}{1-\alpha}\right)^{1-\alpha} \, \frac{1}{Z} \tag{28}$$

$$r_{Taylor} = ExoZeroRate \, \left(\bar{\Pi} - 1 + R\_s\_SS - 1 + \left(\pi - \left(\bar{\Pi} - 1\right)\right) \, \phi_\pi + \phi_y \, \hat{y}\right) \tag{29}$$

$$r^{NEW}_{Taylor} = ExoZeroRate \, \left(\bar{\Pi} - 1 + R\_s\_SS - 1 + \left(\pi - \left(\bar{\Pi} - 1\right)\right) \, \phi_\pi + \phi_y \, \hat{y} - \tilde{y}\right) \tag{30}$$

$$r^{CB}_{nom} = max(ZLB\_min, r^{NEW}_{Taylor}) \tag{31}$$

$$RiskPremiumShock = p\_R\_rp^{1-\rho(e^{RP})} \, RiskPremiumShock^{\rho(e^{RP})} \, exp\left(e\_R\_rp \, \sigma(e^{RP})\right) \tag{32}$$

$$R^s_{nom} = RiskPremiumShock \, \left(1 + r^{CB}_{nom}\right) \tag{33}$$

$$r^n = R\_s\_SS - 1 - \chi^b \, \left(exp\left(\left(\frac{b^b}{\bar{b}} - 1\right) \, (\phi_{local} + \nu)\right) - 1\right) \tag{34}$$

$$r^n_{implied} = R\_s\_SS - 1 + \frac{R^s_{nom}}{R\_s\_nom\_SS} - 1 - \left(\pi - \left(\bar{\Pi} - 1\right)\right) \tag{35}$$

$$\Pi^{Y} = Y\_prod - (w\,L + q\,K) \tag{36}$$

$$Yb\_diff = TB^{b} + DB^{b} + C^{b} + I^{b}\,Q_{k} - w\,L^{b} - K_{b}\,q \tag{37}$$

$$w\_diff = MC\,Z\,(1-\alpha)\,K/L^{\alpha} - w \tag{38}$$

$$delta\_Check = Y - C - Q_{k}\,I - TB \tag{39}$$

$$r^{s} = R^{s} - 1 \tag{40}$$

$$r^{b} = R^{b} - 1 \tag{41}$$

$$r^{s*} = R^{s*} - 1 \tag{42}$$

$$r^{b*} = R^{b*} - 1 \tag{43}$$

$$r^{s}_{nom} = R^{s}_{nom} - 1 \tag{44}$$

$$r^{b}_{nom} = R^{b}_{nom} - 1 \tag{45}$$

$$\pi = \Pi - 1 \tag{46}$$

$$\hat{y} = \frac{Y}{Y\_BAR} - 1 \tag{47}$$

$$\hat{y} - \tilde{y} = \hat{y} - y\_tilde \tag{48}$$

$$\hat{MC} = \frac{MC}{MC\_BAR} - 1 \tag{49}$$

$$\Pi^{foreign}_{banks}(b) = b^{b*}\left(\frac{1}{R\_world} - \frac{1}{R^{b*}}\right) \tag{50}$$

$$\Pi^{foreign}_{banks}(s) = b^{s*}\left(\frac{1}{R\_world} - \frac{1}{R^{s*}}\right) \tag{51}$$

$$\Pi^{foreign}_{banks} = \chi^{b}\,\Pi^{foreign}_{banks}(b) + chi\_s\,\Pi^{foreign}_{banks}(s) \tag{52}$$

$$C_{s}/C = \frac{C^{s}}{C} \tag{53}$$

$$NetWorth_{b} = K_{b}\,Q_{k} - b^{b} - b^{b*} \tag{54}$$

$$b^b/(Q * K^b) = \frac{b^b}{K_b\, Q_k} \tag{55}$$

$$b/Y^B_{ann.} = \frac{b^b}{Y^b\, 4} \tag{56}$$

$$b^{B*}/Y_{ann.} = \frac{\chi^b\, b^{b*}}{Y\, 4} \tag{57}$$

$$b/Y_{ann.} = \frac{\chi^b\, b^b}{Y\, 4} \tag{58}$$

$$r^s_{ann.} = r^s\, 4 \tag{59}$$

$$r^{s*}_{ann.} = r^{s*}\, 4 \tag{60}$$

$$r^b_{ann.} = r^b\, 4 \tag{61}$$

$$r^{b*}_{ann.} = r^{b*}\, 4 \tag{62}$$

$$r^{REP.Euler}_{ann.} = 4\, \left(R^{REP}_{Euler} - 1\right) \tag{63}$$

$$(r_b - r_s)_{ann.} = 4\, (Spread_{Rb} - 1) \tag{64}$$

$$(r_k - r_s)_{ann.} = 4\, \left(\frac{R_k}{R^s} - 1\right) \tag{65}$$

$$i_{ann.} = r^{CB}_{nom}\, 4 \tag{66}$$

$$r^s_{nom.ann.} = r^s_{nom}\, 4 \tag{67}$$

$$r^{RP}_{ann.} = 4\, (RiskPremiumShock - 1) \tag{68}$$

$$Shocktospreadr_b ann. = 4\, (ShocktoSpreadR_b - 1) \tag{69}$$

$$r^b_{nom.ann.} = r^b_{nom}\, 4 \tag{70}$$

$$\pi_{ann.} = \pi\, 4 \tag{71}$$

$$r^{b.Euler}_{ann.} = 4\, \left(R^b_{Euler} - 1\right) \tag{72}$$

$$E[\pi]_{ann.} = 4\, (E[\Pi] - 1) \tag{73}$$

$$E[\pi]^s_{ann.} = 4\, (E[\Pi]^s - 1) \tag{74}$$

$$E[\pi]^{REP}_{ann.} = 4\, \left(E[\Pi]^{REP} - 1\right) \tag{75}$$

$$r^k_{ann.} = 4\, (R_k - 1) \tag{76}$$