Reserve Accumulation with a Private IIP[*]

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Abstract

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1. Model with government borrowing only

1.1 Model summary

Government choices Main problem in repayment

$$V^R(b,a,\mathbf{s}) = \max_{b',a',c_T,h} u(c_T,F(h)) + \beta\mathbb{E}\left[\mathcal{V}\left(b',a',\mathbf{s}'\right)\right] \tag{1}$$
$$\text{subject to } c_T + q_a a' + \kappa^C b = a + y_T(\mathbf{s}) + q_b(b',a',\mathbf{s})(b' - (1-\delta)b)$$
$$h \leq \mathcal{H}(c_T,\bar{w})$$

Main problem in default

$$V^D(b,a,\mathbf{s}) = \max_{a',c_T,h} u(c_T,F(h)) + \beta\mathbb{E}\left[\theta\mathcal{V}(b,a',\mathbf{s}') + (1-\theta)V^D(b,a',\mathbf{s})\right] \tag{2}$$
$$\text{subject to } c_T + q_a a' = a + \mathcal{D}(y_T(\mathbf{s}))$$
$$h \leq \mathcal{H}(c_T,\bar{w})$$

Extreme value preference-for-default shocks yield default probabilities

$$\mathcal{P}(b,a,\mathbf{s}) = \frac{\exp(V^D((1-\hbar)b,a,\mathbf{s})/\sigma^V)}{\exp(V^D((1-\hbar)b,a,\mathbf{s})/\sigma^V) + \exp(V^R(b,a,\mathbf{s})/\sigma^V)} \tag{3}$$

Finally, the value of entering a period with access to markets (and hence an option to default) is

$$\mathcal{V}(b,a,\mathbf{s}) = (1-\mathcal{P}(b,a,\mathbf{s}))V^R(b,a,\mathbf{s}) + \mathcal{P}(b,a,\mathbf{s})V^D((1-\hbar)b,a,\mathbf{s}) \tag{4}$$

Foreigners, debt prices Stochastic discount factor

$$m(\mathbf{s},\mathbf{s}') = \exp(-r - \nu(\psi\epsilon' + 0.5\psi^2\sigma_\epsilon^2)) \qquad \epsilon' = \log(y') - \rho\log(y) - (1-\rho)\mu_y \tag{5}$$
$$q_a = \exp(-r) \tag{6}$$
$$q_b(b',a',\mathbf{s}) = \mathbb{E}\left[m(\mathbf{s},\mathbf{s}')\left(\mathbb{1}_{\mathcal{D}'}(1-\hbar)q_b(b',a',\mathbf{s}') + (1-\mathbb{1}_{\mathcal{D}'})(\kappa^C + (1-\delta)q_b(b',a',\mathbf{s}'))\right)\right] \tag{7}$$

Private economy Preferences

$$u(c_T,c_N) = \left[\varpi_N c_N^{-\eta} + \varpi_T c_T^{-\eta}\right]^{-\frac{1}{\eta}} \tag{8}$$

for $\varpi_N + \varpi_T = 1$.

Production and default costs

$$y_N(h,\mathbb{1}_\mathcal{D}) = (1-\Delta\mathbb{1}_\mathcal{D})h^\alpha \qquad \mathcal{D}(y) = (1-\Delta)y \tag{9}$$

Wage rigidities

$$h \leq \mathcal{H}(c_T,\bar{w},\mathbb{1}_\mathcal{D}) \qquad \mathcal{H}(c_T,\bar{w},\mathbb{1}_\mathcal{D}) = \left(\frac{\varpi_N}{\varpi_T}(1-\Delta\mathbb{1}_\mathcal{D})\frac{\alpha}{\bar{w}}\right)^{\frac{1}{1+\alpha\eta}} c_T^{\frac{1+\eta}{1+\alpha\eta}} \tag{10}$$

1.2 Model results