PS #3 (optional)

1 Quantitative model of sovereign debt

Use the model presented in section 6 of Aguiar and Amador (2014) to solve the following:

1. Compute the Bond-price schedule $q(b_{t+1}, y_t)$ using the following parametrization:
   - $\beta = 0.95$, $y \in \{0.9, 1, 1.05\}$, $\pi_{yy'} = \begin{bmatrix} 0.5 & 0.3 & 0.2 \\ 0.1 & 0.6 & 0.3 \\ 0.2 & 0.4 & 0.4 \end{bmatrix}$, $u(c) = \frac{c^{1-\sigma}}{1-\sigma}$; $\sigma = 2$, $R = 1$, $\lambda = 0.3$ and $\tau = 0.2$.
   - Discretize the space for b.
2. Is there default along the equilibrium path?
   (a) Adjust the parameters to have that the country is 3% of the time in default (excluded from financial markets).
   (b) Plot the probability of default at $t+1$ conditional on the debt-to-GDP ratio b_{t+1}/y_t.
3. Using the data in default_IDEA.dta (Stata file),
   (a) Estimate a logit for the probability of default using debt/GDP as the only regressor and fixed effects.
   (b) Simulate your model.
      i. Estimate the logit of (a) with the simulated data.
      ii. Select τ and β such that the parameter estimates of the simulated and actual data are as close as possible.