
Lista 4

Entrega: 30/06/2018

1) This question will ask you to solve numerically a simple goat farmers economy. Suppose there is a continuum of goat farmers that are subject to endowment shocks. A farmer's endowment is e^z, where z follows the following stochastic process:

$$z' = \rho z + \epsilon,$$

where $\epsilon \sim N(0, \sigma^2)$. The farmer's instantaneous utility function is given by

$$u(c) = \frac{c^{1-\gamma} - 1}{1 - \gamma}$$

and he discounts the future with the factor $\beta \in (0, 1)$. Each farmer has access to a storage technology such that, if he sets aside q goats today, he will have 1 goat tomorrow. His budget constraint can then be writte as:

$$c + qa' = e^z + a$$

Let $\beta = q = 0.96$ and $\gamma = 1.0001$ for now.

a) Let $\rho = 0.9$ and $\sigma = 0.01$. Use the Tauchen method to discretize the stochastic process in a Markov chain with 9 states. (Use 3 standard deviations for each side)

b) Discretize the asset space using a grid and solve the individual goat farmer problem for each state variable.

c) Find the stationary distribution $\pi(z, a)$ and use it to compute the aggregate savings in the economy.

d) Suppose $\rho = .97$. Redo the analysis. How does the savings rate compare now? Explain.

e) Suppose $\gamma = 5$. Redo the analysis. How does the savings rate compare now? Explain.

f) Suppose $\sigma = .05$. Redo the analysis. How does the savings rate compare now? Explain.