Session 6

Stochastic Discount Factor

Suppose that consumption growth has lognormal distribution with the possibility of rare disasters:

$$\ln\tilde{g} = 0.02 + 0.02\tilde{\epsilon} + \tilde{\nu}$$

Here ϵ is a standard normal random variable, while ν is an independent random variable that has value of either zero (with probability of 98.3%) or ln(0.65) (with probability of 1.7%).

Simulate ϵ with (at least) 10^4 random draws from standard normal distribution, and simulate ν with (at least) 10^4 random draws from standard uniform distribution.

Use the simulated distribution of consumption growth to find the simulated distribution of the pricing kernel for power utility:

$$\tilde{M} = 0.99\tilde{g}^{-\gamma}$$

Repeat this process for values of γ in the range from 1 to 4, in increments of 0.1 (or less). (Note that you can reuse the same simulated distribution of consumption growth for all values of γ).

- Calculate μ_M and σ_M for each value of γ, and plot σ_M/μ_M (on the vertical axis) vs γ (on the horizontal axis).
- Find the smallest value of γ (in your data) for which $\sigma_M/\mu_M > 0.4$. Explain (in words, without using any mathematical equations or formulas) the economic significance of this result.

Please submit all relevant results (including graphs and qualitative discussion of economic significance) as an Adobe PDF file to Homework 5 before end of Sunday, 22 Oct 2023.

0 % 0 of 2 topics complete

Wikipedia: Stochastic Discount Factor

Link

Lecture Notes: Stochastic Discount Factor

PDF document