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ECONOMICS 7344 – MACROECONOMIC THEORY II, Spring 2007

Homework 5. Wednesday February 28. Wednesday Monday March 7.

1. Let

$$x_t \ = \alpha_0 \ + \ u_t \ + \ 0.5 * u_{t-1} + u_{t-2} \ ,$$

where u_t is white noise.
Find the auto-covariances for x_t in terms of σ_u^2 (the variance of u_t).

2. Given the AR(2) process

$$x_t \ = \ 3 \ + \ \frac{5}{6} * x_{t-1} \ - \ \frac{1}{6} * x_{t-2} \ + \ u_t$$

where $Eu_t^2 = 2$. Is this process stable?
Assuming that the process is stationary, find the variance of x_t and the first-order covariance.

3. Assume that an agent has a discount factor of 1 and has a quadratic utility function

$$U(C_t) \ = \ C_t - 0.1C_t^2 \ .$$

If the rate of interest is fixed at 0.1 (10 percent) then find consumption at period $t+1$ as a function of consumption at period t using the Euler equation.