

Problem Set

Econometrics

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1. Let z_t , $t = \dots - 2, -1, 0, 1, 2, \dots$ be independent normally distributed random variables with mean zero and variance 1. Let a, b, c be real constants. Which of these processes are covariance-stationary? For what values of the parameters?

(a) $y_t = a + b z_t + c z_{t-1}$

(b) $y_t = z_t \cos(ct) + z_{t-1} \sin(ct)$

2. Consider the AR(2) process

$$(1 - 1.1L + 0.18L^2) y_t = \varepsilon_t,$$

where

$$\varepsilon_t \sim iid(0, \sigma^2).$$

Check whether this process is covariance stationary and if yes, compute its autocovariance function.