

TA session #7

ECON 342

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Problem 1. Assume that the true model for y_t is,

$$y_t = \phi_0 + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \varepsilon_t$$

where ε_t is iid, with mean zero and variance σ^2 . As an econometrician you observe a sample $\{y_t\}_{t=1}^T$. After some thought, you decide to estimate the following model,

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + u_{t-1}$$

(a) Find the asymptotic distribution of your estimates.

(b) You find that $0 < \hat{\alpha}_1 < 1$. From this result, can you conclude that y_t is weakly stationary?

Problem 2. Assume that

$$y_t = \alpha_1 y_{t-1} + \varepsilon_t$$

$$x_t = \phi_1 x_{t-1} + u_t$$

with ε_t and u_t iid with mean zero and common variance σ^2 . As an econometrician you only observe,

$$z_t = y_t + x_t$$

What process does z_t follows?

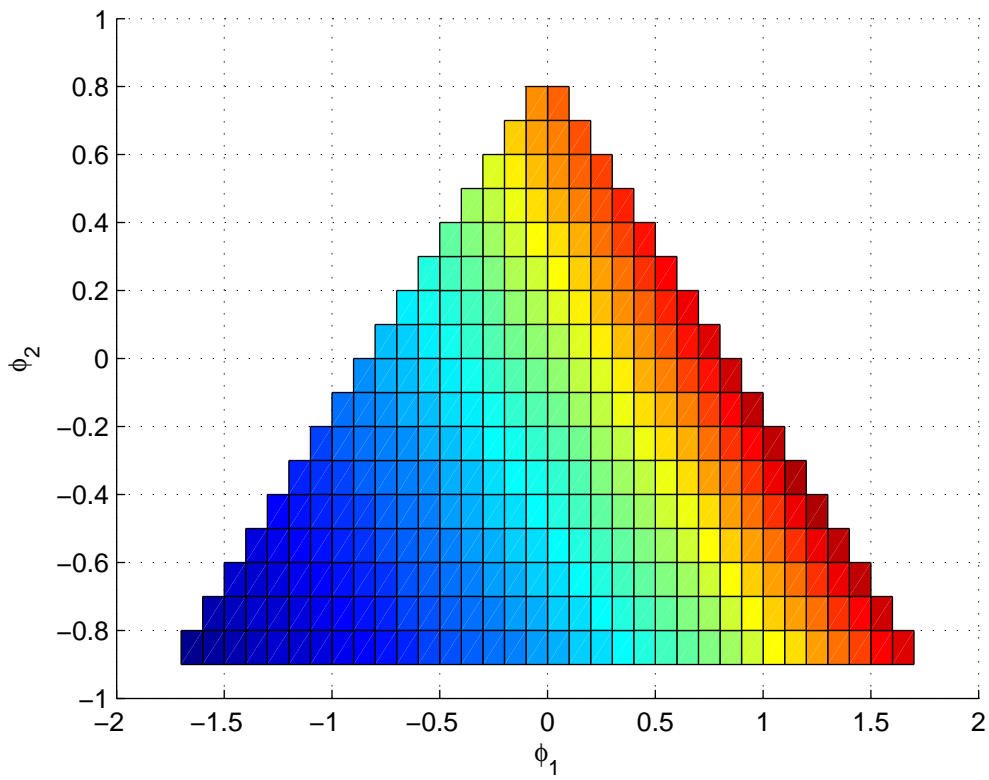


Figure 1: Admissible regions for ϕ_1 and ϕ_2 for a stationary AR(2) process.