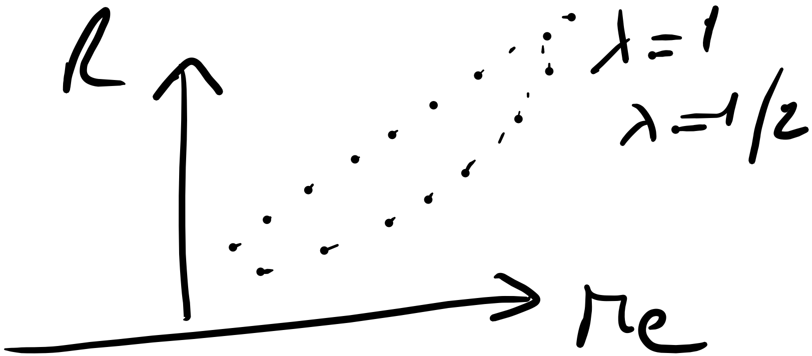
RANGO-MEDIANA

→ R =

→ RANGO

→ MEDIANA

SUBCONJUNTO → K SERIES



ESTACIONARIEDAD EN LA MEDIA (NO)

↳ $E[Y_t]$ NO ES CONSTANTE

i) TENDENCIAS DETERMINÍSTICAS

ii) TENDENCIAS ESTOCÁSTICAS

TSP

TREND STATIONARY PROCESS

$$Y_t = \underbrace{\alpha + \beta t}_{f(t)} + \phi_1 \cdot Y_{t-1} + \varepsilon_t$$

$$|\phi_1| < 1$$

$$\hat{T}(t) = \hat{\alpha} + \hat{\beta} t \rightarrow \hat{Y}_t = Y_t - \hat{T}_t$$

$Y_t \rightarrow$ lm (LINEAR MODEL)

$Y_t \sim t.t$

Tendências estocásticas → Acumulação de shocks no comportamento

Random walk

$$Y_t = Y_{t-1} + \varepsilon_t$$

$$t=1 \quad Y_1 = \underbrace{Y_0 + \varepsilon_1}$$

$$t=2 \quad Y_2 = Y_1 + \varepsilon_2 = Y_0 + \varepsilon_1 + \varepsilon_2$$

$$Y_t = \underbrace{Y_0}_{\text{Costante}} + \sum_{j=1}^{t} \varepsilon_j$$

$$E[Y_t] = Y_0$$

$$Var[Y_t] = t \cdot \sigma_\varepsilon^2$$

$$Y_t = Y_{t-1} + \varepsilon_t$$

$$\underbrace{Y_t - Y_{t-1}}_{\nabla Y_t} = \varepsilon_t$$

$$\nabla Y_t = \varepsilon_t$$

RUIDO BLANCO

↓

ESTACIONARIO

$$E(\nabla Y_t) = 0$$

$$Var(\nabla Y_t) = \sigma^2_\varepsilon$$

• (1) $$Y_t = \alpha + \beta t + \phi_1 \cdot Y_{t-1} + \varepsilon_t$$

$$\nabla Y_t = Y_t - Y_{t-1}$$

(2) $$Y_{t-1} = \alpha + \beta \cdot (t-1) + \phi_1 \cdot Y_{t-2} + \varepsilon_{t-1}$$

(1) − (2) → $$\nabla Y_t = \beta \cdot (\cancel{t} - \cancel{t} + 1) + \phi_1 \cdot \underbrace{(Y_{t-1} - Y_{t-2})}_{\nabla Y_{t-1}} + \underbrace{\varepsilon_t - \varepsilon_{t-1}}_{\text{MA(1) no INV.}}$$

$$\underbrace{Y_t : I(1)}_{}$$

INTEGRADA DE ORDEN 1

$$\int_a^b f(x)\,dx \qquad \lim \sum f(x)$$

→ INTEGRAR

→ SUMAR

Ετασωσημα $\to I(\theta)$

$\phi_1 = 9,9\rho$

$$\text{VALOR REAL} = \frac{\text{VALOR NOMINAL}}{\text{ÍNDICE (ATUALIZADO)}}$$

SALÁRIO ($) $\longrightarrow$ REAL

SARIMA (p, d, q)

$$\left(1-\phi_1 B-\phi_2 B^2-\ldots-\phi_p B^p\right)(1-B)^d Y_t=\phi_0+\left(1-\theta_1 B-\theta_2 B^2-\ldots-\theta_q B^q\right) \epsilon_t$$

$$\Phi(B) \underbrace{(1-B)^d Y_t}_{Z_t}=\phi_0+\Theta(B) \epsilon_t$$

Z_t : ARMA(p, q)

$(1-B)^d \equiv \nabla^d$

∇Y_t : $I(d)$

$(1-B) = \nabla$

$$ARIMA(p,0,q) \equiv ARMA(p,q)$$

Y_t: $ARIMA(0,1,0) \rightarrow$ random walk

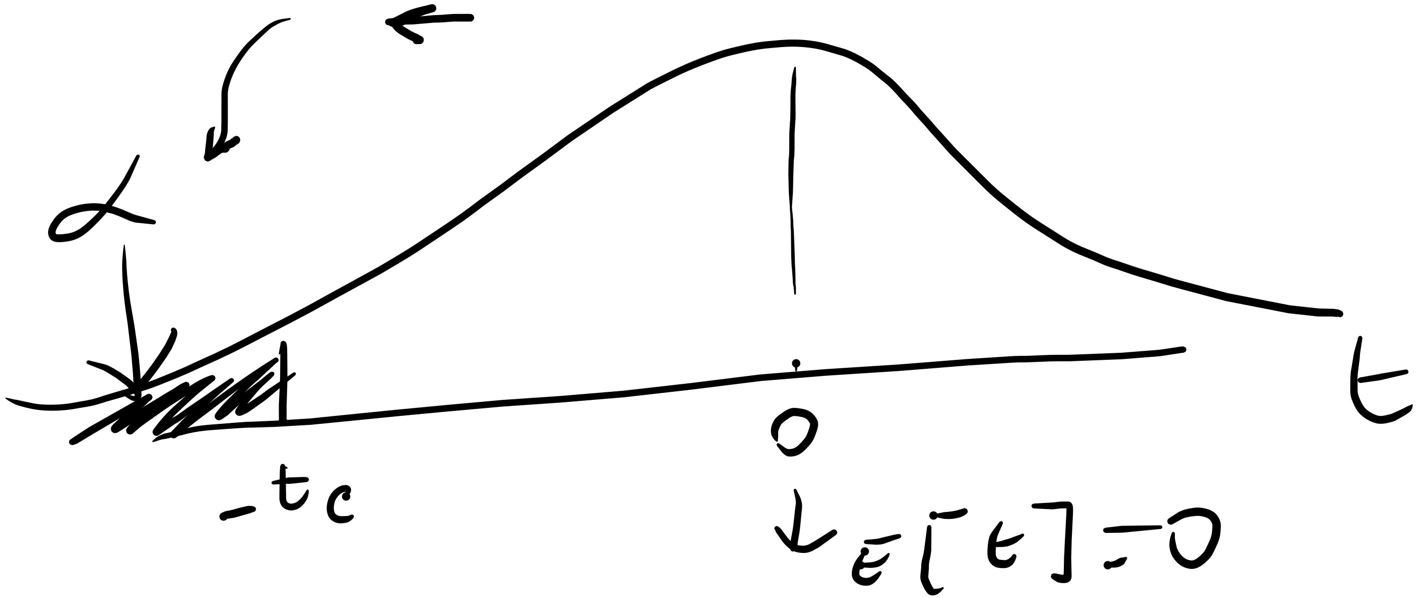
ΔY_t: $ARIMA(0,0,0) \rightarrow$ white noise

$$\text{ARIMA}(3,0,0) \equiv \text{AR}(3)$$

$$\text{ARIMA}(0,0,3) \equiv \underline{\underline{\text{MA}(3)}}$$

$H_0: \cancel{\phi_1 = 1}$ → $\phi_1 - 1 = 0$ no estacionario

$H_a: \phi_1 < 1$ estacionario



$$Y_t = \phi_1 Y_{t-1} + \varepsilon_t \quad AR(1)$$

$$\underbrace{\nabla Y_t = (\phi_1 - 1) \cdot Y_{t-1} + \varepsilon_t}_{\text{EC. DICKEY FULLER}}$$

$H_0 : \phi_1 - 1 = 0 \quad I(1)$

$H_1 : \phi_1 - 1 < 0 \quad I(0)$

τ (TAU)

τ_τ → TREND

τ_μ → DRIFT

NONE → TABULADO — no / α

RHO → $I(0)$

NO RHO → $I(1)$

AR(2)

$$Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \varepsilon_t$$

$$(\phi_1 + \phi_2) \qquad + \phi_2 Y_{t-1} - \phi_2 Y_{t-1}$$

$$Y_t = (\phi_1 + \phi_2) Y_{t-1} - \phi_2 \overbrace{(Y_{t-1} - Y_{t-2})}^{\nabla Y_{t-1}} + \varepsilon_t$$

$$\nabla Y_t = (\underbrace{\phi_1 + \phi_2 - 1}_{\phi_1^*}) Y_{t-1} + \dots$$

H_0: . . . . $I(3)$

H_1: . . . . . . $\begin{bmatrix} I(2) \\ I(1) \\ I(0) \end{bmatrix}$

H_0: . . . . $I(2)$

H_1: . . . . . $\begin{bmatrix} I(1) \\ I(0) \end{bmatrix}$