

A previsão com modelos de espaço de estado: Uma aplicação à economia portuguesa.

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Modelo Estrutural

$$y_t = T_t + C_t + \varepsilon_t \quad \varepsilon_t \sim N(0, \sigma_\varepsilon^2)$$

$$T_t = T_{t-1} + \beta_{t-1} + \delta_t \quad \delta_t \sim N(0, \sigma_\delta^2)$$

$$\beta_t = \beta_{t-1} + \theta_t \quad \theta_t \sim N(0, \sigma_\theta^2)$$

$$C_t = \Phi_1 C_{t-1} + \Phi_2 C_{t-2} + e_t \quad e_t \sim N(0, \sigma_e^2)$$

Modelo Espaço Estados (MEE)

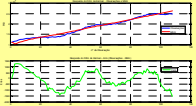
$$y_t = Z_t a_t + \varepsilon_t \quad \varepsilon_t \sim N(0, H_t)$$

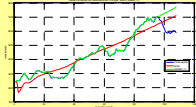
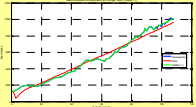
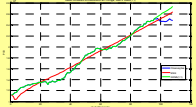
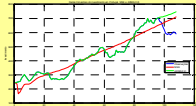
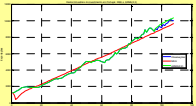
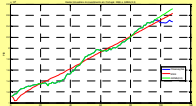
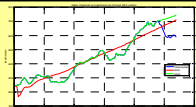
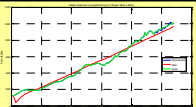
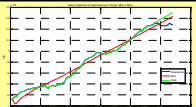
$$a_{t+1} = T_t a_t + R_t \eta_t \quad \eta_t \sim N(0, Q_t)$$

$$a_1 \sim N(a_1, P_1)$$

Previsão com Filtro de Kalman

(testada para 12 trimestres)

Dados Trimestrais de 1978 Q1 a 2004 Q4	Investimento	Exportações	PIB
Observações / MEE e Erros (Observações - MEE)			
Observações / Tendência e Componente Cíclica			

Dados Trimestrais de 1978 Q1 a 2004 Q4	Investimento	Exportações	PIB
Observações / MEE / ARMA(1,1)			
Observações / MEE / ARMA(2,2)			
Observações / MEE / AR(4)			

Rácio dos Erros Quadráticos Médios nos 12 trimestres de previsão	Investimento	Exportações	PIB
Obs. - ARMA(1,1) por Obs. - MEE	2,594484588	0,105839223	3,457130371
Obs. - ARMA(2,2) por Obs. - MEE	2,007601976	0,386007732	3,123596211
Obs. - AR(4) por Obs. - MEE	1,990503124	0,108421305	2,855844755

Nota: Os valores iniciais em todos os MEE para a variância do estado, Φ_1 e Φ_2 foram adoptados de Jin Kim Chang e Charles R. Nelson. State-Space Models with regime Switching. MIT Press, 1999, p. 40.



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