"COURAGE"

Review

Stochastic processes
- tests: conditional & equil distributions ("static")
- properties: mean, variance, autocorrelations ...

MA = { finite, infinite
AR = { ⇒ MA, direct

$E(x) = \lim_{t \to \infty} E_t(x_{t+k})$
$\text{var}(x_t) = \lim_{t \to \infty} \text{var}_t(x_{t+k})$
} dist (if exists)

$\text{Prob}(x) = \lim_{t \to \infty} \text{Prob}_t(x_{t+k})$

Bond pricing
$q_t^{n+1} = E_t(m_{t+1} q_{t+1}^n)$
m is random, can't be iid

log linear examples

(MA) $\log m_t = \delta + \sum_{j=0}^{\infty} a_j w_{t-j}$

(VAR)

(CVR)

(linear price yield)

$f_t^n = \log q_t^n - \log q_t^{n+1}$

$-f_t^n = (A_{n+1} - A_n) + (B_{n+1} - B_n) X_t$

$-E f_t^n = (A_{n+1} - A_n) + (B_{n+1} - B_n) \delta$

too pure of risk!

LRAS : log linear

Affine models

Term premiums

$$f_t^n = \mathcal{E}_t f_{t+n}^0 + tp_t^n$$

Defn

sum

constant

state-dependent

martingale : $\mathcal{E}_t f_{t+1}^n = \mathcal{E}_t f_{t+1}^{n-1}$

Regressions

$\beta_1 \approx 0.5$

Term premiums in affine models

Vasicek : term premiums constant

CIR : skip

linear price of risk :