Gaussian model for Stochastic volatility

Parametrization

The Gaussian likelihood for stochastic volatility models is defined as:

$$y|\ldots = \sigma\epsilon$$

where

$$\epsilon \sim \mathcal{N}(0,1)$$

Link-function

The squared of the scale parameter σ is linked to the linear predictor η as:

$$\sigma^2 = \exp(\eta) + 1/\tau$$

where $1/\tau$ is an possible offset in the variance.

Hyperparameters

This likelihood has one hyperparmeter

$$\theta = \log(\tau)$$

and the prior is defined on θ .

See Notes for more info about the possible offset in the variance, as default $1/\tau = 0$ and fixed.

Specification

- family = stochvol
- Required argument: y.

Hyperparameter spesification and default values

doc The Gaussian stochvol likelihood

hyper

theta

hyperid 82001
name log precision
short.name prec
initial 500
fixed TRUE
prior loggamma
param 1 0.005
to.theta function(x) log(x)
from.theta function(x) exp(x)

survival FALSE

discrete FALSE

link default log

pdf stochvolgaussian

Example

In the following example we specify the likelihood for the stochastic volatility model to be Gaussian

Notes

The default setting treat θ as fixed and with an initial value so that $1/\tau = 0$. If θ is random, then you must also give it a reasonable initial value.