Package ‘WaveLetLongMemory’

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Type Package
Title Estimating Long Memory Parameter using Wavelet
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Description Estimation of the long memory parameter using wavelets. Other estimation techniques like GPH (Geweke and Porter-Hudak, 1983, <DOI:10.1111/j.1467-9892.1983.tb00371.x>) and Semiparametric methods (Robinson, P. M., 1995, <DOI:10.1214/aos/1176324317>) also have included.
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R topics documented:

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Wavelet Estimating Long Memory using wavelets

Description

The function WVLM estimates the long memory parameter using wavelets as well as using other two methods namely GPH and Semiparametric.
Usage

WVL(Method,Xt,bandwidth,BetaLagParzen,typeWvtrans,filtertype)

Arguments

Method -> GPH, SEMIPARAMETRIC, WAVELET
Xt -> univariate time series
bandwidth -> The bandwidth used in the regression equation
BetaLagParzen -> exponent of the bandwidth used in the lag Parzen window
typeWvtrans -> type of wavelet transform i.e. dwt or modwt
filtertype -> Either a wt.filter object, a character string indicating which wavelet filter to use in the decomposition, or a numeric vector of wavelet coefficients

Value

Method -> GPH, SEMIPARAMETRIC, WAVELET.
xt -> univariate time series.
bandwidth -> The bandwidth used in the regression equation.
WVL -> Out Approach.
GPH.Estimations -> The GPH estimator is based on the regression equation using the periodogram function as an estimate of the spectral density.
SEM.Estimations -> It is based on the regression equation using the smoothed periodogram function as an estimate of the spectral density.
Wavelet.Estimations -> WAVELET method makes use Jensen (1994) estimator to estimate the memory parameter d in the ARFIMA(p,d,q) model based on wavelet technique.

Author(s)

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References

Examples

```r
## Simulating Long Memory Series
N <- 1000
PHI <- 0.2
THETA <- 0.1
SD <- 1
M <- 0
D <- 0.2
Seed <- 123

set.seed(Seed)
Sim.Series <- fracdiff::fracdiff.sim(n = N, ar = c(PHI), ma = c(THETA),
  d = D, rand.gen = rnorm, sd = SD, mu = M)

Yt <- as.ts(Sim.Series$series)

## GPH Estimation
WVLM(Method = "GPH", Xt = Yt, bandwidth = 0.5)

## SEMIPARAMETRIC Estimation
WVLM(Method = "SEMIPARAMETRIC", Xt = Yt, bandwidth = 0.5, BetaLagParzen = 0.2)

## WAVELET Estimation using different filtertype
WVLM(Method = "WAVELET", Xt = Yt, typeWvtrans = "modwt", filtertype = "haar")
WVLM(Method = "WAVELET", Xt = Yt, typeWvtrans = "modwt", filtertype = "d6")
WVLM(Method = "WAVELET", Xt = Yt, typeWvtrans = "modwt", filtertype = "s8")
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