Package ‘unsystation’

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Type Package

Title Stationarity Test Based on Unsystematic Sub-Sampling

Version 0.2.1

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Description Performs a test for second-order stationarity of time series based on unsystematic sub-samples.

License GPL-2

Suggests RcppArmadillo

Imports Rcpp (>= 0.12.10), doParallel, foreach, iterators

LinkingTo Rcpp, RcppArmadillo

RoxygenNote 7.3.1

Encoding UTF-8

NeedsCompilation yes

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Repository CRAN

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Contents

`unsys.station.test` *A second-order stationarity of time series based on unsystematic sub-samples*

Description

The function implements a stationarity test procedure, where the main statistic is obtained from measuring the difference in the second-order structure over pairs of randomly drawn intervals. Maximising the main statistics after AR Sieve bootstrap-based variance stabilisation, the test statistic is obtained which is reported along with the corresponding pair of intervals and the test outcome.

Usage

```
unsys.station.test(
  x,
  M = 2000,
  sig.lev = 0.05,
  max.scale = NULL,
  m = NULL,
  B = 200,
  eps = 5,
  use.all = FALSE,
  do.parallel = 0
)
```

Arguments

`x`	input time series
`M`	number of randomly drawn intervals
`sig.lev`	significance level between `0` and `1`
`max.scale`	number of wavelet scales used for wavelet periodogram computation; `max.scale = NULL` activates the default choice (`max.scale = round(log(log(length(x), 2), 2))`)
`m`	minimum length of a random interval; `m = NULL` activates the default choice (`m = round(sqrt(length(x)))`)
`B`	bootstrap sample size
`eps`	a parameter used for random interval generation, see the supplementary document of Cho (2016)
`use.all`	if `use.all=TRUE`, all `M*M` pairs of random intervals are considered in test statistic computation; if `use.all=FALSE`, only `10*M` pairs are used; regardless, the whole `M*M` pairs are considered in test criterion generation
`do.parallel`	number of copies of R running in parallel, if `do.parallel = 0`, %do% operator is used, see also foreach

Value

`intervals`	a pair of intervals corresponding to the test statistic, exhibiting the most distinct second-order behaviour
`test.stat`	test statistic
`test.criterion`	test criterion
`test.res`	if `test.res=TRUE`, the null hypothesis of stationarity is rejected at the given significance level

References

H. Cho (2016) A second-order stationarity of time series based on unsystematic sub-samples. Stat, vol. 5, 262-277.

Examples

```
## Not run:
x <- rnorm(200)
unsys.station.test(x, M=1000)

## End(Not run)
```

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