Package 'unsystation'

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Type Package

Title Stationarity Test Based on Unsystematic Sub-Sampling

Version 0.2.0

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

License GPL-2

LazyData TRUE

Suggests RcppArmadillo

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

LinkingTo Rcpp, RcppArmadillo

RoxygenNote 6.0.1

NeedsCompilation yes

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Repository CRAN

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R topics documented:

`unsystation-package` *A second-order stationarity of time series based on unsystematic sub-samples*

Description

The package implements a new method for testing the stationarity of time series, where the test statistic is obtained from measuring and maximising the difference in the second-order structure over pairs of randomly drawn intervals.

Details

Package:	unsystation
Type:	Package
Version:	0.2.0
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License:	GPL (>= 2)

The main routine of the package is `unsys.station.test`.

Author(s)

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References

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

`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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