Package ‘GMZTests’

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Description

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R topics documented:

- `deltadmc.test` ................................................. 2
- `deltadmca.test` ............................................. 3
- `deltarhodcca.test` ........................................ 4
- `dfa.test` ..................................................... 5
- `dmc.test` .................................................... 6
- `dmca.test` ................................................... 7
- `rhodcca.test` ............................................... 8

Index 9

deltadmc.test  

Statistical test for Delta DMC Multiple Detrended Cross-Correlation Coefficient

Description

This function performs the statistical test for Delta DMC cross-correlation coefficient from three univariate ARFIMA process.

Usage

```r
deltadmc.test(x1, x2, y, k, nu, rep, method)
```

Arguments

- `x1`: A vector containing univariate time series.
- `x2`: A vector containing univariate time series.
- `y`: A vector containing univariate time series.
- `k`: An integer value indicating the boundary of the division \((N/k)\). The smallest value of \(k\) is 4.
- `nu`: An integer value. See the DCCA package.
- `rep`: An integer value indicating the number of repetitions.
- `method`: A character string indicating which correlation coefficient is to be used. If `method = "rhodcca"` the dmc coefficient is generated from the DCCA coefficient. If `method = "dmca"`, the dmc coefficient is generated from the DMCA coefficient.

Details

This function include the following measures: timescale, dmc_before, dmc_after, deltadmc

Value

An list containing "timescale", "dmc_before", "dmc_after", "deltadmc", "CI_0.90", "CI_0.95", "CI_0.99".
References


Examples

```r
x1 <- rnorm(1000)
x2 <- rnorm(1000)
y <- rnorm(1000)
deltadmca.test(x1,x2,y, k=100, nu=0, rep=10, method="rhodcca")
```

---

deltadmca.test  
Statistical test for Statistical test for DMCA cross-correlation coefficient.

Description

This function performs the statistical test for Detrending moving-average cross-correlation coefficient from two univariate ARFIMA process.

Usage

deltadmca.test(x, y, k, rep)

Arguments

- `x`: A vector containing univariate time series.
- `y`: A vector containing univariate time series.
- `k`: An integer value indicating the boundary of the division \((N/k)\). The smallest value of \(k\) is 4.
- `rep`: An integer value indicating the number of repetitions.

Details

This function include following measures: timescale, rho_before, rho_after, deltarho

Value

An list containing "timescale", "mean", "sd", "rho_before", "rho_after", "deltarho", "CI_0.90", "CI_0.95", "CI_0.99".
References


Examples

```r
x <- rnorm(1000)
y <- rnorm(1000)
deltadmca.test(x,y,k=100,rep=10)
```

---

deltarhodcca.test  
Statistical test for Delta RHODCCA cross-correlation coefficient.

Description

This function performs the statistical test for Delta RHODCCA cross-correlation coefficient from two univariate ARFIMA process.

Usage

deltarhodcca.test(x, y, k, nu, rep)

Arguments

- `x` A vector containing univariate time series.
- `y` A vector containing univariate time series.
- `k` An integer value indicating the boundary of the division \((N/k)\). The smallest value of \(k\) is 4.
- `nu` An integer value. See the DCCA package.
- `rep` An integer value indicating the number of repetitions.

Details

This function include following measures: timescale, rho_before, rho_after, deltarho

Value

An list containing "timescale", "mean", "sd", "rho_before", "rho_after", "deltarho", "CI_0.90", "CI_0.95", "CI_0.99".
** DFA Test **

** References **

** Examples **

```r
x <- rnorm(1000)
y <- rnorm(1000)
deltarhodcca.test(x, y, k=100, nu=0, rep=10)
```

---

** DFA Test **

** Statistical test for Detrended Fluctuation Analysis. **

** Description **
This function performs the statistical test for the long-range correlation exponents obtained by the Detrended Fluctuation Analysis method.

** Usage **

dfa.test(y, npoints, rep, ts.sim, prob)

** Arguments **

- `y` A vector containing univariate time series.
- `npoints` The number of different window sizes that will be used to estimate the Fluctuation function in each zone. See nonlinearTseries package.
- `rep` An integer value indicating the number of repetitions.
- `ts.sim` An logical value. If TRUE, the confidence interval for alpha_dfa is obtained from a White Gaussian Noise. If FALSE, the confidence interval for alpha_dfa is obtained from the shuffling of the original series.
- `prob` An numeric value indicating the quantile of probability to be used in estimating confidence intervals by N(0,1).

** Details **
This function include following measures alpha_dfa, se_alpha_dfa, r2_alpha_dfa, min_test, max_test, mean_test, median_test, sd_test, skewness_test, kurtosis_test, Jarquebera_test_pvalue, CL_lower_test, CL_upper_test.

** Value **
An rbind matrix containing "alpha_dfa","se_alpha_dfa","r2_alpha_dfa","min_alpha_dfa","max_test","mean_test","median_test","sd_test","skewness_test","kurtosis_test","jarquebera_test_pvalue", and confidence interval: "CI_lower_test","CI_upper_test".
dmc.test

Reference


Examples

```r
y=rnorm(1000)
dfa.test(y, npoints=15, rep=10, ts.sim="TRUE", prob=.95)
```

---

**dmc.test**  
*Statistical test for Multiple Detrended Cross-Correlation Coefficient*

**Description**

This function performs the statistical test for DMC Cross-Correlation Coefficient based in White Gaussian Noise process.

**Usage**

```r
dmc.test(N, k, method, nu, rep)
```

**Arguments**

- **N**: An integer value for the time series length.
- **k**: An integer value indicating the boundary of the division \((N/k)\). The smallest value of \(k\) is 4.
- **method**: A character string indicating which correlation coefficient is to be used. If \(method = \text{"rhodcca"}\) the \(dmc\) coefficient is generated from the DCCA coefficient. If \(method = \text{"dmca"}\), the \(dmc\) coefficient is generated from the DMCA coefficient.
- **nu**: An integer value. See the DCCA package.
- **rep**: An integer value indicating the number of repetitions.

**Details**

This function include following measures: \(w\), \(timescale\), \(dmc\), \(rhodcca_yx1\), \(rhodcca_yx2\), \(rhodcca_x1x2\)

**Value**

An list containing "timescale", parameters of beta distribution: "shape1", "se1", "shape2", "se2" and confidence interval: "CI_0.90_uppper", "CI_0.95_uppper", "CI_0.99_uppper". 
**dmca.test**

**References**


**Examples**

```r
dmca.test(N=100, k=10, method="rhodcca", nu=0, rep=10)
```

---

**dmca.test**

*Statistical test for DMCA cross-correlation coefficient.*

**Description**

This function performs the statistical test for Detrending moving-average cross-correlation coefficient based in White Gaussian Noise process.

**Usage**

```r
dmca.test(N, k, rep)
```

**Arguments**

- **N**
  - An integer value for the time series length.

- **k**
  - An integer value indicating the boundary of the division \(N/k\). The smallest value of \(k\) is 4.

- **rep**
  - An integer value indicating the number of repetitions.

**Details**

This function include following measures: timescale and cross-correlation \(yx\).

**Value**

An list containing "timescale", "mean", "sd" and confidence interval: "CI_0.90", "CI_0.95", "CI_0.99".

**References**


**Examples**

```r
dmca.test(N=100, k=10, rep=10)
```
rhodcca.test

Statistical test for detrended cross-correlation coefficient

Description
This function performs the statistical test for RHODCCA cross-correlation coefficient based in White Gaussian Noise process.

Usage
rhodcca.test(N, k, nu, rep)

Arguments
- N: An integer value for the time series length.
- k: An integer value indicating the boundary of the division \((N/k)\). The smallest value of \(k\) is 4.
- nu: An integer value. See the DCCA package.
- rep: An integer value indicating the number of repetitions.

Details
This function include following measures: timescale and cross-correlation \(yx\).

Value
An list containing "timescale","mean","sd" and confidence interval: "CI_0.90", "CI_0.95", "CI_0.99".

References

Examples
rhodcca.test(N=100, k=10, nu=0, rep=10)
Index

deltadmc.test, 2
deltadmca.test, 3
deltarhodcca.test, 4
dfa.test, 5
dmc.test, 6
dmca.test, 7

rhodcca.test, 8