Package 'Hassani.SACF'

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Type Package

Title Computing Lower Bound of Ljung-Box Test

Version 2.0

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Description The Ljung-
Box test is one of the most important tests for time series diagnostics and model selection.
The Hassani SACF (Sum of the Sample Autocorrelation Function) Theorem , however, indi-
cates that the sum of sample autocorrelation function is always fix for
any stationary time series with arbitrary length. This package confirms for sensitivity of the Ljung-
Box test to
the number of lags involved in the test and therefore it should be used with extra caution.
The Hassani SACF Theorem has been described in : Has-
sani, Yeganegi and M. R. (2019) <doi:10.1016/j.physa.2018.12.028>.

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Contents

Q_H   *Computing Lower Bound of Ljung-Box Test*

Description

Because of the sensitivity of the Ljung-Box test to the number of lags involved in the test, this function computes lower bound of this test and draws it's plot.

Usage

```
Q_H(simnum = 10000, TT = 50)
```

Arguments

simnum   number of simulation iterations.

TT   length of time serie.

Value

Lower bound of the Ljung-Box test and it's plot.

Author(s)

Hossein hassani, Masoud yarmohammdi, Mohammad reza yeganegi and Leila Marvian Mashhad.

References

Hassani, H., & Yeganegi, M. R. (2019). "Sum of squared ACF and the Ljung-Box statistics." Physica A: Statistical Mechanics and Its Applications, 520, 81-86.

See Also

```
Box.test
```

Examples

```
Q_H(simnum = 10000, TT = 100)
```

SACF   *Computing Sum of the Sample Autocorrelation Function*

Description

The sum of the sample autocorrelation function, found in many standard time series textbooks and software, at lag h is considered. It is shown that this sum is always minus half for any stationary time series with arbitrary length L.

Usage

```
SACF(x)
```

Arguments

x   it is stationary time series.

Value

A number. It computes SACF.

Author(s)

Hossein hassani, Masoud yarmohammdi, Mohammad reza yeganegi and Leila Marvian Mashhad.

References

A note on the sum of the sample autocorrelation function Hossein Hassani Statistics Group, Cardiff School of Mathematics, Cardiff University, CF24 4AG, UK 2-Statistical Research and Training Center, Tehran, 1413717911, Iran

See Also

```
Box.test
```

Examples

```
x = rnorm(50,mean = 0,sd = 1)
SACF(x)
```

Index