Package ‘actfts’

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Type Package

Title Autocorrelation Tools Featured for Time Series

Version 0.3.0

Maintainer Sergio Sierra <sergiochess95@gmail.com>

Description The 'actfts' package provides tools for performing autocorrelation analysis of time series data. It includes functions to compute and visualize the autocorrelation function (ACF) and the partial autocorrelation function (PACF). Additionally, it performs the Dickey-Fuller, KPSS, and Phillips-Perron unit root tests to assess the stationarity of time series. Theoretical foundations are based on Box and Cox (1964) <doi:10.1111/j.2517-6161.1964.tb00553.x>, Box and Jenkins (1976) <isbn:978-0-8162-1234-2>, and Box and Pierce (1970) <doi:10.1080/01621459.1970.10481180>. Statistical methods are also drawn from Kolmogorov (1933) <doi:10.1007/BF00993594>, Kwiatkowski et al. (1992) <doi:10.1016/0304-4076(92)90104-Y>, and Ljung and Box (1978) <doi:10.1093/biomet/65.2.297>. The package integrates functions from 'forecast' (Hyndman & Khandakar, 2008) <https://CRAN.R-project.org/package=forecast>, 'tseries' (Trapletti & Hornik, 2020) <https://CRAN.R-project.org/package=tseries>, 'xts' (Ryan & Ulrich, 2020) <https://CRAN.R-project.org/package=xts>, and 'stats' (R Core Team, 2023) <https://stat.ethz.ch/R-manual/R-devel/library/stats/html/00Index.html>. Additionally, it provides visualization tools via 'plotly' (Sievert, 2020) <https://CRAN.R-project.org/package=plotly> and 'reactable' (Glaz, 2023) <https://CRAN.R-project.org/package=reactable>. The package also incorporates macroeconomic datasets from the U.S. Bureau of Economic Analysis: Disposable Personal Income (DPI) <https://fred.stlouisfed.org/series/DPI>, Gross Domestic Product (GDP) <https://fred.stlouisfed.org/series/GDP>, and Personal Consumption Expenditures (PCEC) <https://fred.stlouisfed.org/series/PCEC>.

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Encoding UTF-8

LazyData true

Imports openxlsx, plotly, reactable, tseries, xts, stats, forecast, lifecycle

RoxygenNote 7.3.2

Depends R (>= 2.10)

URL https://github.com/SergioFinances/actfts,
https://sergiofinances.github.io/actfts/

BugReports https://github.com/SergioFinances/actfts/issues

Suggests dplyr, knitr, rmarkdown, testthat (>= 3.0.0)

Config/testthat/edition 3

VignetteBuilder knitr

NeedsCompilation no

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Contents

`acfinter` *ACF and PACF Analysis with Interactive Features*

Description

acfinter computes and visualizes the ACF and PACF of a given time series, performs stationarity tests, and optionally generates interactive tables and plots.

Usage

```
acfinter(
  datag,
  lag = 72,
  ci.method = "white",
  ci = 0.95,
  interactive = NULL,
  delta = "levels",
  download = FALSE
)
```

Arguments

`datag`	A numeric vector or a time series object.
`lag`	Maximum number of lags for the ACF and PACF. Default is 72.
`ci.method`	Method for confidence intervals: "white" (default) or "ma".
`ci`	Confidence level for confidence intervals. Default is 0.95.
`interactive`	Character string specifying whether to create an interactive table: "acftable" for the ACF-PACF table, "stattable" for the stationarity tests table. Default is NULL.
`delta`	Transformation of the data: "levels" (default), "diff1", "diff2", or "diff3".
`download`	Logical indicating whether to save the results as files. Default is FALSE.

Value

A list with two elements: "ACF-PACF Test" and "Stationary Test". The function also creates interactive plots and tables if specified.

Examples

```
data <- actfts::GDPEEUU
result <- actfts::acfinter(data, lag = 20, ci.method = "white", interactive = "acftable")
print(result)
```

DPIEEUU *Gross Domestic Product of the United States.*

Description

This dataset contains the disposable personal income of the United States from 01/01/1947 to the present with quartely frequency.

Usage

```
DPIEEUU
```

Format

A dataset in xts format with one variable and several files that are automatically updated depending on the update of the data's FRED:

DPI Disposable Personal Income in billions of dollars

Source

https://fred.stlouisfed.org/series/DPI

References

U.S. Bureau of Economic Analysis, Disposable Personal Income (DPI), retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DPI

GDPEEUU *Gross Domestic Product of the United States.*

Description

This dataset contains the gross domestic product of the United States from 01/01/1947 to the present with quartely frequency.

Usage

```
GDPEEUU
```

Format

A dataset in xts format with one variable and several files that are automatically updated depending on the update of the data's FRED:

GDP Gross Domestic product in billions of dollars

Source

https://fred.stlouisfed.org/series/GDP

References

U.S. Bureau of Economic Analysis, Gross Domestic Product (GDP), retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GDP

PCECEEUU *Personal Consumption Expenditures of the United States.*

Description

This dataset contains the personal consumption expenditures of the United States from 01/01/1947 to the present with quartely frequency.

Usage

```
PCECEEUU
```

Format

A dataset in xts format with one variable and several files that are automatically updated depending on the update of the data's FRED:

PCEC Personal Consumption Expenditures in billions of dollars

Source

https://fred.stlouisfed.org/series/PCEC

References

U.S. Bureau of Economic Analysis, Personal Consumption Expenditures (PCEC), retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PCEC

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