

Package ‘WaveletGARCH’

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Type Package

Title Fit the Wavelet-GARCH Model to Volatile Time Series Data

Version 0.1.1

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Description Fits the combination of Wavelet-GARCH model for time series forecasting using algorithm by Paul (2015) <[doi:10.3233/MAS-150328](https://doi.org/10.3233/MAS-150328)>.

License GPL

Imports stats, wavelets, FinTS, forecast, parallel, rugarch, fracdiff, methods

LazyData TRUE

NeedsCompilation no

Repository CRAN

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autoarima-class	<i>class:autoarima-result-class</i>
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Description

class to store results of auto.arima

Examples

```
showClass("autoarima")
```

WaveletGARCHFit	<i>Fitting of Wavelet-GARCH model</i>
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Description

Fitting of Wavelet-GARCH model based on ARCH LM test.

Usage

```
WaveletGARCHFit(series, filtern, level)
## S3 method for class 'WaveletGARCHFit'
print(x, ...)
```

Arguments

series	univariate time series
filtern	The name of wavelet filter
level	The level of wavelet decomposition
x	An object of WaveletGARCHFit
...	Additional arguments if any

Value

fittedobject	The fitted value of the series by Wavelet-GARCH model
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References

- Percival D. B. and Walden A. T. 2000. Wavelet Methods for Time-Series Analysis. Cambridge Univ. Press, U.K.
- Paul R. K., Prajneshu and Ghosh H. 2013. Wavelet Frequency Domain Approach for Modelling and Forecasting of Indian Monsoon Rainfall Time-Series Data. Journal of the Indian society of agricultural statistics, 67, 319 to 327.
- Paul, R.K. and BIRTHAL, P.S. 2015. Investigating rainfall trend over India using wavelet technique. Journal of Water and Climate Change, 7, 365 to 378.
- Paul, R. K. 2015. ARIMAX-GARCH-WAVELET Model for forecasting volatile data. Model Assisted Statistics and Application, 10, 243 to 252.

Examples

```
data(mtcars)
ab<-mtcars$qsec

objfit<-WaveletGARCHFit(ab,"d4",4)
```

WaveletGARCHFore *Forecasting by Wavelet-GARCH model*

Description

Forecasting of Wavelet-GARCH model based on ARCH LM test.

Usage

```
WaveletGARCHFore(series, filtern, level, nofore)
## S3 method for class 'WaveletGARCHFore'
print(x, ...)
```

Arguments

series	univariate time series
filtern	The name of wavelet filter
level	The level of wavelet decomposition
nofore	The lead period of forecast
x	An object of WaveletGARCHFore
...	Additional arguments if any

Value

forecastobject The forecasted values of the series by Wavelet-GARCH model

References

- Percival D. B. and Walden A. T. 2000. Wavelet Methods for Time-Series Analysis. Cambridge Univ. Press, U.K.
- Paul R. K., Prajneshu and Ghosh H. 2013. Wavelet Frequency Domain Approach for Modelling and Forecasting of Indian Monsoon Rainfall Time-Series Data. Journal of the Indian society of agricultural statistics, 67, 319 to 327.
- Paul, R.K. and BIRTHAL, P.S. 2015. Investigating rainfall trend over India using wavelet technique. Journal of Water and Climate Change, 7, 365 to 378.
- Paul, R. K. 2015. ARIMAX-GARCH-WAVELET Model for forecasting volatile data. Model Assisted Statistics and Application, 10, 243 to 252.

Examples

```
data(mtcars)
ab<-mtcars$qsec

objfore<-WaveletGARCHFore(ab,"d4",4,10)
```

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