Package 'frequencyConnectedness'

November 10, 2020

Type Package

Title Spectral Decomposition of Connectedness Measures

Version 0.2.3

Date 2020-11-10

Description Accompanies a paper (Barunik, Krehlik (2018) <doi:10.1093/jjfinec/nby001>) dedicated to spectral decomposition of connectedness measures and their interpretation. We implement all the developed estimators as well as the historical counterparts. For more information, see the help or GitHub page (<https://github.com/tomaskrehlik/frequencyConnectedness>) for relevant information.

Depends vars, urca, knitr, pbapply

Suggests testthat, stringr, mAr, reshape2, ggplot2, parallel, zoo, BigVAR

Imports methods

License GPL-2

RoxygenNote 7.1.1

BugReports https://github.com/tomaskrehlik/frequencyConnectedness/issues

URL https://github.com/tomaskrehlik/frequencyConnectedness

NeedsCompilation no

Author Tomas Krehlik [aut, cre]

Maintainer Tomas Krehlik <tomas.krehlik@gmail.com>

Repository CRAN

Date/Publication 2020-11-10 22:20:08 UTC

R topics documented:

`collapseBounds` *Method for for collapsing bound for frequency spillovers*

Description

Method for for collapsing bound for frequency spillovers

Usage

```
collapseBounds(spillover_table, which)
```

Arguments

`spillover_table`	the output of spillover estimation function or rolling spillover estimation function
`which`	integer vector indicating which of the frequency bounds we want to have collapsed

Value

New spillover object with collapsed bounds

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`collapseBounds.list_of_spills` *Function to collapse bounds*

Description

Taking in list_of_spills, if the individual spillover_tables are frequency based, it allows you to collapse several frequency bands into one.

Usage

```
## S3 method for class 'list_of_spills'
collapseBounds(spillover_table, which)
```

Arguments

`spillover_table`	a list_of_spills object, ideally from the provided estimation functions
`which`	which frequency bands to collapse. Should be a sequence like 1:2 or 1:5, etc.

Value

list_of_spills with less frequency bands.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`collapseBounds.spillover_table` *Function to collapse bounds*

Description

Taking in spillover_table, if the spillover_table is frequency based, it allows you to collapse several frequency bands into one.

Usage

```
## S3 method for class 'spillover_table'
collapseBounds(spillover_table, which)
```

Arguments

`spillover_table`	a spillover_table object, ideally from the provided estimation functions
`which`	which frequency bands to collapse. Should be a sequence like 1:2 or 1:5, etc.

Value

spillover_table with less frequency bands.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`exampleSim` *The simulated time-series*

Description

The dataset includes three simulated processes with spillover dynamics.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`fevd` *Compute a forecast error vector decomposition in recursive identification scheme*

Description

This function computes the standard forecast error vector decomposition given the estimate of the VAR.

Usage

```
fevd(est, n.ahead = 100, no.corr = F)
```

Arguments

`est`	the VAR estimate from the vars package
`n.ahead`	how many periods ahead should be taken into account
`no.corr`	boolean if the off-diagonal elements should be set to 0.

Value

a matrix that corresponds to contribution of ith variable to jth variance of forecast

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`fftFEVD` *Compute a FFT transform of forecast error vector decomposition in recursive identification scheme*

Description

This function computes the decomposition of standard forecast error vector decomposition given the estimate of the VAR. The decomposition is done according to the Stiassny (1996)

Usage

```
fftFEVD(est, n.ahead = 100, no.corr = F, range)
```

Arguments

`est`	the VAR estimate from the vars package
`n.ahead`	how many periods ahead should be taken into account
`no.corr`	boolean if the off-diagonal elements should be set to 0.
`range`	defines the frequency partitions to which the spillover should be decomposed

Value

a list of matrices that corresponds to contribution of ith variable to jth variance of forecast

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`fftGenFEVD` *Compute a FFT transform of forecast error vector decomposition in generalised VAR scheme.*

Description

This function computes the decomposition of standard forecast error vector decomposition given the estimate of the VAR. The decomposition is done according to the Stiassny (1996)

Usage

```
fftGenFEVD(est, n.ahead = 100, no.corr = F, range)
```

Arguments

`est`	the VAR estimate from the vars package
`n.ahead`	how many periods ahead should be taken into account
`no.corr`	boolean if the off-diagonal elements should be set to 0.
`range`	defines the frequency partitions to which the spillover should be decomposed

Value

a list of matrices that corresponds to contribution of ith variable to jth variance of forecast

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

from *Method for computing FROM spillovers*

Description

Method for computing FROM spillovers

Usage

```
from(spillover_table, ...)
```

Arguments

spillover_table	the output of spillover estimation function or rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

Value for FROM spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

from.list_of_spills *Function to compute from spillovers*

Description

Taking in list_of_spillovers, the function computes the from spillovers for all the individual spillover_table.

Usage

```
## S3 method for class 'list_of_spills'
from(spillover_table, within = F, ...)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the from spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`from.spillover_table` *Function to compute from spillovers*

Description

Taking in spillover_table, the function computes the from spillover.

Usage

```
## S3 method for class 'spillover_table'
from(spillover_table, within = F, ...)
```

Arguments

`spillover_table`	a spillover_table object, ideally from the provided estimation functions
`within`	whether to compute the within spillovers if the spillover tables are frequency based.
`...`	for the sake of CRAN not to complain

Value

a list containing the from spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

genFEVD *Compute a forecast error vector decomposition in generalised VAR scheme.*

Description

This function computes the standard forecast error vector decomposition given the estimate of the VAR. There are common complaints and requests whether the computation is ok and why it does not follow the original Pesaran Shin (1998) article. So let me clear two things out. First, the σ in the equation on page 20 refers to elements of Σ, not standard deviation. Second, the indexing is wrong, it should be $\sigma_j j$ not $\sigma_i i$. Look, for example, to Diebold and Yilmaz (2012) or ECB WP by Dees, Holly, Pesaran, and Smith (2007) for the correct version.

Usage

```
genFEVD(est, n.ahead = 100, no.corr = F)
```

Arguments

est	the VAR estimate from the vars package
n.ahead	how many periods ahead should be taken into account
no.corr	boolean if the off-diagonal elements should be set to 0.

Value

a matrix that corresponds to contribution of ith variable to jth variance of forecast

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

getIndeces *Get the indeces for the individual intervals*

Description

This function returns the indeces of the vector coming from DFT of time series of length n.ahead that correspond to frequencies in the interval (up, down].

Usage

```
getIndeces(n.ahead, up, down)
```

Arguments

n.ahead	the length of the vector coming out of the DFT
up	the upper boundary of the interval
down	the lower boundary of the interval

Author(s)

Tomas Krehlik <tomas.krehlik@sorgmail.com>

---

getPartition *Get a list of indeces corresponding to parts of frequency partition*

Description

This function takes in a vector of numbers denoting the breaks in partition of an interval and returns a list of indeces that correspond to indeces that are contained within an individual intervals. The individual parts then contain (a,b] for all pairs in the interval. Hence if you want pi to be included, the partition should start with something slightly bigger than pi.

Usage

```
getPartition(partition, n.ahead)
```

Arguments

partition	breaking points of partition of frequency interval, should be ordered decreasingly.
n.ahead	how many observations is the FFT done on.

Value

a list of vectors of indeces corresponding to individual partitions

Author(s)

Tomas Krehlik <tomas.krehlik@sorgmail.com>

net *Method for computing NET spillovers*

Description

Method for computing NET spillovers

Usage

```
net(spillover_table, ...)
```

Arguments

spillover_table	the output of spillover estimation function or rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

Value for NET spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

net.list_of_spills *Function to compute net spillovers*

Description

Taking in list_of_spillovers, the function computes the net spillovers for all the individual spillover_table.

Usage

```
## S3 method for class 'list_of_spills'
net(spillover_table, within = F, ...)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the net spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`net.spillover_table` *Function to compute net spillovers*

Description

Taking in spillover_table, the function computes the net spillover.

Usage

```
## S3 method for class 'spillover_table'
net(spillover_table, within = F, ...)
```

Arguments

`spillover_table`	a spillover_table object, ideally from the provided estimation functions
`within`	whether to compute the within spillovers if the spillover tables are frequency based.
`...`	for the sake of CRAN not to complain

Value

a list containing the net spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

overall *Method for computing overall spillovers*

Description

Method for computing overall spillovers

Usage

```
overall(spillover_table, ...)
```

Arguments

spillover_table	the output of spillover estimation function or rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

Value for overall spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

overall.list_of_spills *Function to compute overall spillovers*

Description

Taking in list_of_spillovers, the function computes the overall spillovers for all the individual spillover_table.

Usage

```
## S3 method for class 'list_of_spills'
overall(spillover_table, within = F, ...)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the overall spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

overall.spillover_table

Function to compute overall spillovers

Description

Taking in spillover_table, the function computes the overall spillover.

Usage

```
## S3 method for class 'spillover_table'
overall(spillover_table, within = F, ...)
```

Arguments

spillover_table	a spillover_table object, ideally from the provided estimation functions
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the overall spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

pairwise *Method for computing PAIRWISE spillovers*

Description

Method for computing PAIRWISE spillovers

Usage

```
pairwise(spillover_table, ...)
```

Arguments

spillover_table	the output of spillover estimation function or rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

Value for PAIRWISE spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

pairwise.list_of_spills *Function to compute pairwise spillovers*

Description

Taking in list_of_spillovers, the function computes the pairwise spillovers for all the individual spillover_table.

Usage

```
## S3 method for class 'list_of_spills'
pairwise(spillover_table, within = F, ...)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the pairwise spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

pairwise.spillover_table

Function to compute pairwise spillovers

Description

Taking in spillover_table, the function computes the pairwise spillover.

Usage

```
## S3 method for class 'spillover_table'
pairwise(spillover_table, within = F, ...)
```

Arguments

spillover_table	a spillover_table object, ideally from the provided estimation functions
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the pairwise spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotFrom *Method for ploting FROM spillovers*

Description

Method for ploting FROM spillovers

Usage

```
plotFrom(spillover_table, ...)
```

Arguments

spillover_table	the output of rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

The plot

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotFrom.list_of_spills *Function to plot from spillovers*

Description

Taking in list_of_spillovers, the function plots the from spillovers using the zoo::plot.zoo function

Usage

```
## S3 method for class 'list_of_spills'
plotFrom(
  spillover_table,
  within = F,
  which = 1:nrow(spillover_table$list_of_tables[[1]]$tables[[1]]),
  ...
)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
which	a vector with indices specifying which plots to plot.
...	for the sake of CRAN not to complain

Value

a plot of from spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

plotNet *Method for ploting NET spillovers*

Description

Method for ploting NET spillovers

Usage

```
plotNet(spillover_table, ...)
```

Arguments

spillover_table	the output of rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

The plot

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotNet.list_of_spills *Function to plot net spillovers*

Description

Taking in list_of_spillovers, the function plots the net spillovers using the zoo::plot.zoo function

Usage

```
## S3 method for class 'list_of_spills'
plotNet(
  spillover_table,
  within = F,
  which = 1:nrow(spillover_table$list_of_tables[[1]]$tables[[1]]),
  ...
)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
which	a vector with indices specifying which plots to plot.
...	for the sake of CRAN not to complain

Value

a plot of net spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotOverall *Method for ploting overall spillovers*

Description

Method for ploting overall spillovers

Usage

```
plotOverall(spillover_table, ...)
```

Arguments

spillover_table	the output of rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

The plot

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

plotOverall.list_of_spills

Function to plot overall spillovers

Description

Taking in list_of_spillovers, the function plots the overall spillovers using the zoo::plot.zoo function

Usage

```
## S3 method for class 'list_of_spills'
plotOverall(spillover_table, within = F, ...)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a plot of overall spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotPairwise *Method for ploting PAIRWISE spillovers*

Description

Method for ploting PAIRWISE spillovers

Usage

```
plotPairwise(spillover_table, ...)
```

Arguments

spillover_table	the output of rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

The plot

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotPairwise.list_of_spills *Function to plot pairwise spillovers*

Description

Taking in list_of_spillovers, the function plots the pairwise spillovers using the zoo::plot.zoo function

Usage

```
## S3 method for class 'list_of_spills'
plotPairwise(
  spillover_table,
  within = F,
 which = 1:ncol(utils::combn(nrow(spillover_table$list_of_tables[[1]]$tables[[1]]),
    2)),
  ...
)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
which	a vector with indices specifying which plots to plot.
...	for the sake of CRAN not to complain

Value

a plot of pairwise spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

plotTo *Method for ploting TO spillovers*

Description

Method for ploting TO spillovers

Usage

```
plotTo(spillover_table, ...)
```

Arguments

spillover_table	the output of rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

The plot

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

plotTo.list_of_spills *Function to plot to spillovers*

Description

Taking in list_of_spillovers, the function plots the to spillovers using the zoo::plot.zoo function

Usage

```
## S3 method for class 'list_of_spills'
plotTo(
  spillover_table,
  within = F,
  which = 1:nrow(spillover_table$list_of_tables[[1]]$tables[[1]]),
  ...
)
```

Arguments

spillover_table	a list_of_spills object, ideally from rolling window estimation
within	whether to compute the within spillovers if the spillover tables are frequency based.
which	a vector with indices specifying which plots to plot.
...	for the sake of CRAN not to complain

Value

a plot of to spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

print.list_of_spills *Function to not print the list_of_spills object*

Description

Usually it is not a good idea to print the list_of_spills object, hence this function implements warning and shows how to print them individually if the user really wants to.

Usage

```
## S3 method for class 'list_of_spills'
print(x, ...)
```

Arguments

x	a list_of_spills object, ideally from the provided estimation functions
...	for the sake of CRAN not to complain

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

print.spillover_table *Function to print the spillover table object*

Description

The function takes as an argument the spillover_table object and prints it nicely to the console. While doing that it also computes all the neccessary measures.

Usage

```
## S3 method for class 'spillover_table'
print(x, ...)
```

Arguments

x	a spillover_table object, ideally from the provided estimation functions
...	for the sake of CRAN not to complain

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spillover *Computing spillover from a fevd*

Description

This function is an internal implementation of the spillover. The spillover is in general defined as the contribution of the other variables to the fevd of the self variable. This function computes the spillover as the contribution of the diagonal elements of the fevd to the total sum of the matrix. The other functions are just wrappers around this function. In general, other spillovers could be implemented using this function.

Usage

```
spillover(func, est, n.ahead, no.corr = F)
```

Arguments

func	name of the function that returns FEVD for the estimtate est
est	the estimate of a system, typically VAR estimate in our case
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverBK09 *Computing the decomposed spillover from a fevd as defined by Barunik, Krehlik (2018)*

Description

This function is an internal implementation of the frequency spillover. We apply the identification scheme suggested by fevd to the frequency decomposition of the transfer functions from the estimate est.

Usage

```
spilloverBK09(est, n.ahead = 100, no.corr, partition)
```

Arguments

est	the estimate of a system, typically VAR estimate in our case
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
partition	defines the frequency partitions to which the spillover should be decomposed

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`spilloverBK12` *Computing the decomposed spillover from a generalized fevd as defined by Barunik, Krehlik (2018)*

Description

This function is an internal implementation of the frequency spillover. We apply the identification scheme suggested by fevd to the frequency decomposition of the transfer functions from the estimate est.

Usage

```
spilloverBK12(est, n.ahead = 100, no.corr, partition)
```

Arguments

`est`	the estimate of a system, typically VAR estimate in our case
`n.ahead`	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
`no.corr`	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
`partition`	defines the frequency partitions to which the spillover should be decomposed

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`spilloverDY09` *Computing spillover from a fevd according to Diebold Yilmaz (2009)*

Description

This function is an internal implementation of the spillover. The spillover is in general defined as the contribution of the other variables to the fevd of the self variable. This function computes the spillover as the contribution of the diagonal elements of the fevd to the total sum of the matrix. The other functions are just wrappers around this function. In general, other spillovers could be implemented using this function.

Usage

```
spilloverDY09(est, n.ahead = 100, no.corr)
```

Arguments

est	the estimate of a system, typically VAR estimate in our case
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverDY12 *Computing spillover from a generalized fevd according to Diebold Yilmaz (2012)*

Description

This function is an internal implementation of the spillover. The spillover is in general defined as the contribution of the other variables to the fevd of the self variable. This function computes the spillover as the contribution of the diagonal elements of the fevd to the total sum of the matrix. The other functions are just wrappers around this function. In general, other spillovers could be implemented using this function.

Usage

```
spilloverDY12(est, n.ahead = 100, no.corr)
```

Arguments

est	the estimate of a system, typically VAR estimate in our case
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

spilloverFft *Computing the decomposed spillover from a fevd*

Description

This function is an internal implementation of the frequency spillover. We apply the identification scheme suggested by fevd to the frequency decomposition of the transfer functions from the estimate est.

Usage

```
spilloverFft(func, est, n.ahead, partition, no.corr = F)
```

Arguments

func	name of the function that returns FEVD for the estimtate est
est	the estimate of a system, typically VAR estimate in our case
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
partition	defines the frequency partitions to which the spillover should be decomposed
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero

Value

spillover_table object

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

spilloverRolling *Computing rolling spillover*

Description

This function computes the rolling spillover using the standard VAR estimate. We implement the parallel version for faster processing. The window is of fixed window and is rolled over the data. Interpretation of the other parameters is the same as in the standard computation of spillover. For usage, see how spilloverRollingDY09, etc. are implemented.

Usage

```
spilloverRolling(
  func_spill,
  params_spill,
  func_est,
  params_est,
  data,
  window,
  cluster = NULL,
  check_data = TRUE
)
```

Arguments

func_spill	name of the function that returns FEVD for the estimtate est
params_spill	parameters from spillover estimation function as a list
func_est	name of the estimation function
params_est	parameters from the estimation function as a list
data	variable containing the dataset
window	length of the window to be rolled
cluster	either NULL for no parallel processing or the variable containing the cluster.
check_data	whether to check the data for NAs before starting estimation. Typically should be left true unless the underlying estimate is providing a way how to infer those NAs.

Value

A corresponding spillover value on a given freqeuncy band, ordering of bands corresponds to the ordering of original bounds.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverRollingBK09 *Computing rolling frequency spillover from a fevd as defined by Barunik, Krehlik (2018)*

Description

This function computes the rolling spillover using the standard VAR estimate. We implement the parallel version for faster processing. The window is of fixed window and is rolled over the data. Interpretation of the other parameters is the same as in the standard computation of spillover.

Usage

```
spilloverRollingBK09(
  data,
  n.ahead = 100,
  no.corr,
  partition,
  func_est,
  params_est,
  window,
  cluster = NULL
)
```

Arguments

data	variable containing the dataset
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
partition	how to split up the estimated spillovers into frequency bands. Should be a vector of bound points that starts with 0 and ends with pi+0.00001.
func_est	estimation function, usually would be VAR or BigVAR function to estimate the multivariate system
params_est	parameters passed to the estimation function, as a list, for parameters refer to documentation of the estimating function
window	length of the window to be rolled
cluster	either NULL for no parallel processing or the variable containing the cluster.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverRollingBK12 *Computing rolling frequency spillover from a generalized fevd as defined by Barunik, Krehlik (2018)*

Description

This function computes the rolling spillover using the standard VAR estimate. We implement the parallel version for faster processing. The window is of fixed window and is rolled over the data. Interpretation of the other parameters is the same as in the standard computation of spillover.

Usage

```
spilloverRollingBK12(
  data,
  n.ahead = 100,
  no.corr,
  partition,
  func_est,
  params_est,
  window,
  cluster = NULL
)
```

Arguments

data	variable containing the dataset
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
partition	defines the frequency partitions to which the spillover should be decomposed
func_est	a name of the function to estimate with, for example "var" for VAR from vars package
params_est	a list of the parameters to pass to the function besides the data that are passed as a first element.
window	length of the window to be rolled
cluster	either NULL for no parallel processing or the variable containing the cluster.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverRollingDY09 *Computing rolling spillover according to Diebold Yilmaz (2009)*

Description

This function computes the rolling spillover using the standard VAR estimate. We implement the parallel version for faster processing. The window is of fixed window and is rolled over the data. Interpretation of the other parameters is the same as in the standard computation of spillover.

Usage

```
spilloverRollingDY09(
  data,
  n.ahead = 100,
  no.corr,
  func_est,
  params_est,
  window,
  cluster = NULL
)
```

Arguments

data	variable containing the dataset
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
func_est	estimation function, usually would be VAR or BigVAR function to estimate the multivariate system
params_est	parameters passed to the estimation function, as a list, for parameters refer to documentation of the estimating function
window	length of the window to be rolled
cluster	either NULL for no parallel processing or the variable containing the cluster.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

spilloverRollingDY12 *Computing rolling spillover from the generalized fevd according to Diebold Yilmaz (2012)*

Description

This function computes the rolling spillover using the standard VAR estimate. We implement the parallel version for faster processing. The window is of fixed window and is rolled over the data. Interpretation of the other parameters is the same as in the standard computation of spillover.

Usage

```
spilloverRollingDY12(
  data,
  n.ahead = 100,
  no.corr,
```

```
  func_est,
  params_est,
  window,
  cluster = NULL
)
```

Arguments

data	variable containing the dataset
n.ahead	how many periods ahead should the FEVD be computed, generally this number should be high enough so that it won't change with additional period
no.corr	boolean parameter whether the off-diagonal in the covariance matrix should be set to zero
func_est	estimation function, usually would be VAR or BigVAR function to estimate the multivariate system
params_est	parameters passed to the estimation function, as a list, for parameters refer to documentation of the estimating function
window	length of the window to be rolled
cluster	either NULL for no parallel processing or the variable containing the cluster.

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

to *Method for computing TO spillovers*

Description

Method for computing TO spillovers

Usage

```
to(spillover_table, ...)
```

Arguments

spillover_table	the output of spillover estimation function or rolling spillover estimation function
...	other arguments like whether it is within or absolute spillover in case of the frequency spillovers

Value

Value for TO spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`to.list_of_spills` *Function to compute to spillovers*

Description

Taking in list_of_spillovers, the function computes the to spillovers for all the individual spillover_table.

Usage

```
## S3 method for class 'list_of_spills'
to(spillover_table, within = F, ...)
```

Arguments

`spillover_table`	a list_of_spills object, ideally from rolling window estimation
`within`	whether to compute the within spillovers if the spillover tables are frequency based.
`...`	for the sake of CRAN not to complain

Value

a list containing the to spillovers

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

`to.spillover_table` *Function to compute to spillovers*

Description

Taking in spillover_table, the function computes the to spillover.

Usage

```
## S3 method for class 'spillover_table'
to(spillover_table, within = F, ...)
```

Arguments

spillover_table	a spillover_table object, ideally from the provided estimation functions
within	whether to compute the within spillovers if the spillover tables are frequency based.
...	for the sake of CRAN not to complain

Value

a list containing the to spillover

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

---

volatilities *Volatilities from Ox Man Institute*

Description

The dataset includes median realised volatilities of some financial indices

Author(s)

Tomas Krehlik <tomas.krehlik@gmail.com>

Index