Package 'svarCAL'

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Type Package

Title Calibration using Structural VAR model

Version 0.1.0

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Description More about what it does (maybe more than one line)
        Use four spaces when indenting paragraphs within the Description.

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

Depends R (>= 3.5.0), dplyr, tidyr, pwr, Matrix, vars, fastICA,
        permutations, gtools, rlang, pracma, matrixStats, purrr,
        matrixcalc

Additional_repositories

RemoteType github

RemoteHost api.github.com

RemoteRepo svarCAL

RemoteUsername STieleman

RemoteRef HEAD

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GithubRepo svarCAL

GithubUsername STieleman

GithubRef HEAD

GithubSHA1 f7dad4f71cb0c4998cbcc83d1fddb813c5421219

NeedsCompilation no

R topics documented:

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elim *elim*

Description

elim

Usage

```
elim(D_bar, variance)
```

Arguments

D_bar	vector of average distances for different CoPs
variance	covariance matrix of D_bar

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fastICA_gen *fast_ICA_general*

Description

Indentification of the mixing matrix through Indepdent component analysis alogrithm "fastICA" and ordering of matrix

Usage

```
fastICA_gen(ures, sseed = 46, maxit = 3000, tol = 1e-14, verbose = FALSE)
```

Arguments

`ures`	residuals of VAR model
`sseed`	seed
`maxit`	see fastICA docu
`tol`	see fastICA docu
`verbose`	see fastICA docu

`fastICA_model`   *fast_ICA_model*

Description

Indentification of the list of list model mixing matrix through Indepdent component analysis alogrithm "fastICA"

Usage

```
fastICA_model(
  residuals,
  sseed = 46,
  maxit = 3000,
  tol = 1e-14,
  verbose = FALSE
)
```

Arguments

`residuals`	matrix of VAR residuals
`sseed`	seed
`maxit`	see fastICA docu
`tol`	see fastICA docu
`verbose`	see fastICA docu

`fast_ICA_model`   *fast_ICA_model*

Description

Indentification of the model mixing matrix through Indepdent component analysis alogrithm "fastICA"

Usage

```
fast_ICA_model(residuals, n.comp, ...)
```

Arguments

`residuals`	matrix of VAR residuals
`n.comp`	number of components to identify
`...`	see other fastICA comments

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lag_MA_components   *lag_MA_components*

Description

Function to extract the coefficients of lagged componenets of the moving average represenetation of the VAR model

Usage

```
lag_MA_components(var_est, Mixmat, maxlag = 5)
```

Arguments

var_est	result of estimated VAR model
Mixmat	estimated mixing matrix of contemporanous effects
maxlag	nubmer of lagged coefficient to compute

---

lag_MA_components_mod *lag_MA_components_mod*

Description

Function to apply the lag_MA_components function to a list of list of model estimates

Usage

```
lag_MA_components_mod(var_est_model, Mixmat_model, maxlag = 5)
```

Arguments

var_est_model	var estimates of the model in a list of lists
Mixmat_model	estimates of the model mixing matrx in a list of lists
maxlag	number of lagged components to compute

MCS *MCS function*

Description

Function to determine the model confidence set and p-values

Usage

```
MCS(MDI_matrix, fun_p = p_values, fun_el = elim, dA = dA)
```

Arguments

MDI_matrix	matrix of MDIs
fun_p	function to determine p-value
fun_el	elemination rule
dA	significance threshold

MCS_list *MSC_list*

Description

Computes the minimal confidence set of list of MDI matrices

Usage

```
MCS_list(MDI_matrix_list, dA = 1)
```

Arguments

MDI_matrix_list	
	list of MDI matrices
dA	significance level default dA=1 selet best cop

MDI *MDI*

Description

Function to calculate the Minimal Dinstance Index (MDI) between the estimates of the model mixing matrix and the real world mixing matrix

Usage

```
MDI(phi_mod, phi_emp)
```

Arguments

phi_mod	MA representation of model data VAR
phi_emp	MA representation of empirical data VAR

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model_data   *Model Data Function*

Description

Function to generate the model data for multiple samples of the parameter space and multiple runs

Usage

```
model_data(model, param_space, sample_number, runs, T)
```

Arguments

model	function representing the theoretical model to be calibrated
param_space	a matrix consisting of two columns with the minimum and maximum value for each parameter
sample_number	number of samples to draw from the parameter space
runs	the number of runs per parameter sample
T	number of time periods to generate

Value

a matrix containing the model data for the specified number of runs and samples

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p_values   *p_values*

Description

Function to determine the p-values of minimal distance index based on Chi-squared

Usage

```
p_values(iN, dA, D_bar, variance)
```

Arguments

iN	number of runs per CoP
dA	significance theshold
D_bar	vector of average distances for different CoPs
variance	covariance matrix of D_bar

resid_model	*resid_model*

Description

Calculate the residuals based on the VAR estimate of the model data

Usage

```
resid_model(var_est)
```

Arguments

var_est	VAR estimate based on model data

sample_size	*Sample size*

Description

Function to calculate sample following Seri & Secchi (2017)

Usage

```
sample_size(sample_number, effect_size = 0.1, sigma = 0.01, power_test = 0.95)
```

Arguments

sample_number	number of parameter samples used
effect_size	set to conservative default of 0.1
sigma	significance level, set to default of 0.01
power_test	power of ANAVO test, set to default of 0.95

VAR_emp	*VAR__emp*

Description

VAR estimation based on empirical data

Usage

```
VAR_emp(
  data,
  var_select,
  lag_select,
  season = NULL,
  exog = NULL,
  type = "const"
)
```

Arguments

`data`	Empirical data to be used
`var_select`	Variables to be compared to the model SVAR
`lag_select`	Integer for the lag order (default is p=1).
`season`	Inlusion of centered seasonal dummy variables (integer value of frequency).
`exog`	Inlusion of exogenous variables.
`type`	Type of deterministic regressors to include.

`VAR_model`   *VAR_model*

Description

VAR estimation based on model data

Usage

```
VAR_model(
  var_select,
  model_data,
  trim,
  lag_select,
  season = NULL,
  exog = NULL,
  type = "const"
)
```

Arguments

`var_select`	select the variables to be compared to the real world SVAR.
`model_data`	list of list of dataframes generated by the model.
`trim`	the number of observation to trim from the data set from 0 - trim
`lag_select`	Integer for the lag order (default is p=1).
`season`	Inlusion of centered seasonal dummy variables (integer value of frequency).
`exog`	Inlusion of exogenous variables.
`type`	Type of deterministic regressors to include.

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