

Package ‘metaVAR’

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Title Multivariate Meta-Analysis of Vector Autoregressive Model
Coefficients

Version 0.9.1

Description Estimates the mean vector and covariance matrix of the
multivariate meta-analysis of vector autoregressive model coefficients.

URL <https://github.com/jeksterslab/metaVAR>,
<https://jeksterslab.github.io/metaVAR/>

BugReports <https://github.com/jeksterslab/metaVAR/issues>

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Encoding UTF-8

Roxygen list(markdown = TRUE)

Depends R (>= 3.5.0), OpenMx

Imports numDeriv, Matrix

Suggests knitr, rmarkdown, testthat, simStateSpace

RoxygenNote 7.3.1

NeedsCompilation no

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FitDTVAR

*Fit First Order Discrete-Time Vector Autoregressive Model by ID***Description**

Fit First Order Discrete-Time Vector Autoregressive Model by ID

Usage

```
FitDTVAR(
  data,
  observed,
  id,
  beta_start = NULL,
  beta_lbound = NULL,
  beta_ubound = NULL,
  psi_start = NULL,
  psi_lbound = NULL,
  psi_ubound = NULL,
  try = 1000,
  ncores = NULL
)
```

Arguments

data	Data frame. A data frame object of data for potentially multiple subjects that contain a column of subject ID numbers (i.e., an ID variable), and at least one column of observed values.
observed	Character vector. A vector of character strings of the names of the observed variables in the data.
id	Character string. A character string of the name of the ID variable in the data.
beta_start	Optional starting values for beta.
beta_lbound	Optional lower bound for beta.
beta_ubound	Optional upper bound for beta.
psi_start	Optional starting values for psi.
psi_lbound	Optional lower bound for psi.
psi_ubound	Optional upper bound for psi.
try	Positive integer. Number of extra tries for OpenMx::mxTryHard() .
ncores	Positive integer. Number of cores to use.

Author(s)

Ivan Jacob Agaloos Pesigan

See Also

Other Meta-Analysis of VAR Functions: [Meta\(\)](#)

Meta

Fit Multivariate Meta-Analysis

Description

This function estimates the mean and covariance matrix of a vector of coefficients using the estimated coefficients and sampling variance-covariance matrix from each individual.

Usage

```
Meta(object, mu_start = NULL, sigma_l_start = NULL, try = 1000, ncores = NULL)
```

Arguments

<code>object</code>	Object of class <code>metavardtvar</code> , that is, the output of FitDTVAR() .
<code>mu_start</code>	Numeric matrix. Matrix of starting values of μ .
<code>sigma_l_start</code>	Numeric matrix. Matrix of starting values of $t(\text{chol}(\sigma))$.
<code>try</code>	Positive integer. Number of extra tries for OpenMx::mxTryHard() .
<code>ncores</code>	Positive integer. Number of cores to use.

Details

For $i = \{1, \dots, n\}$, the objective function used to estimate the mean μ and covariance matrix Σ of the random coefficients y_i is given by

$$\ell(\mu, \Sigma \mid y_i, \mathbb{V}(y_i)) = -\frac{1}{2} \left[q \log(2\pi) + \log(|\mathbb{V}(y_i) - \Sigma|) + (y_i - \mu)' (\mathbb{V}(y_i) - \Sigma)^{-1} (y_i - \mu) \right]$$

where q is the number of unique elements in μ and Σ , and $\mathbb{V}(y_i)$ is the sampling variance-covariance matrix of y_i .

Value

Returns an object of class `metavarmeta` which is a list with the following elements:

- call** Function call.
- args** Function arguments.
- fun** Function used ("Meta").
- output** Fitted model.
- transform** Transformed estimates.

Author(s)

Ivan Jacob Agaloos Pesigan

See Also

Other Meta-Analysis of VAR Functions: [FitDTVAR\(\)](#)

print.metavarmeta	<i>Print Method for Object of Class metavarmeta</i>
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Description

Print Method for Object of Class metavarmeta

Usage

```
## S3 method for class 'metavarmeta'  
print(x, alpha = 0.05, digits = 4, ...)
```

Arguments

x	an object of class metavarmeta.
alpha	Numeric vector. Significance level α .
digits	Integer indicating the number of decimal places to display.
...	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

summary.metavarmeta	<i>Summary Method for Object of Class metavarmeta</i>
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Description

Summary Method for Object of Class metavarmeta

Usage

```
## S3 method for class 'metavarmeta'  
summary(object, alpha = 0.05, digits = 4, ...)
```

Arguments

object	an object of class metavarmeta.
alpha	Numeric vector. Significance level α .
digits	Integer indicating the number of decimal places to display.
...	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

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