

Package ‘metaVAR’

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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.default\(\)](#), [Meta.metavardtvar\(\)](#)

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(y, ...)
```

Arguments

y R object.

- Object of class `metavarctvar`.
- Object of class `metavardtvar`.
- Object of class `list` each element of which is a numeric vector of estimated coefficients.

... Additional arguments.

Details

For $i = \{1, \dots, n\}$, the objective function used to estimate the mean $\boldsymbol{\mu}$ and covariance matrix $\boldsymbol{\Sigma}$ of the random coefficients \mathbf{y}_i is given by

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

where q is the number of unique elements in $\boldsymbol{\mu}$ and $\boldsymbol{\Sigma}$, and $\mathbb{V}(\mathbf{y}_i)$ is the sampling variance-covariance matrix of \mathbf{y}_i .

Author(s)

Ivan Jacob Agaloos Pesigan

See Also

Other Meta-Analysis of VAR Functions: [FitDTVAR\(\)](#), [Meta.default\(\)](#), [Meta.metavardtvar\(\)](#)

Meta.default

*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

```
## Default S3 method:
Meta(
  y,
  vcov_y = NULL,
  mu_start = NULL,
  sigma_l_start = NULL,
  try = 1000,
  ncores = NULL,
  ...
)
```

Arguments

y	Object of class list. Each element of the list is a numeric vector of estimated coefficients.
vcov_y	List. Each element of the list is a sampling variance-covariance matrix of y.
mu_start	Numeric matrix. Matrix of starting values of mu.
sigma_l_start	Numeric matrix. Matrix of starting values of $t(\text{chol}(\text{sigma}))$.
try	Positive integer. Number of extra tries for OpenMx::mxTryHard() .
ncores	Positive integer. Number of cores to use.
...	Additional arguments.

Details

For $i = \{1, \dots, n\}$, the objective function used to estimate the mean $\boldsymbol{\mu}$ and covariance matrix $\boldsymbol{\Sigma}$ of the random coefficients \mathbf{y}_i is given by

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

where q is the number of unique elements in $\boldsymbol{\mu}$ and $\boldsymbol{\Sigma}$, and $\mathbb{V}(\mathbf{y}_i)$ is the sampling variance-covariance matrix of \mathbf{y}_i .

Author(s)

Ivan Jacob Agaloos Pesigan

See Also

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

Meta.metavardtvar	<i>Fit Multivariate Meta-Analysis</i>
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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

```
## S3 method for class 'metavardtvar'
Meta(y, mu_start = NULL, sigma_l_start = NULL, try = 1000, ncores = NULL, ...)
```

Arguments

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

Details

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

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

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

Author(s)

Ivan Jacob Agaloos Pesigan

See Also

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

```
print.metavardtvar      Print Method for Object of Class metavardtvar
```

Description

Print Method for Object of Class metavardtvar

Usage

```
## S3 method for class 'metavardtvar'
print(x, means = TRUE, ...)
```

Arguments

x	an object of class metavardtvar.
means	Logical. If means = TRUE, return means. Otherwise, the function returns raw estimates.
...	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

```
print.metavarmeta      Print Method for Object of Class metavarmeta
```

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.metavardtvar *Summary Method for Object of Class metavardtvar*

Description

Summary Method for Object of Class metavardtvar

Usage

```
## S3 method for class 'metavardtvar'  
summary(object, means = TRUE, ...)
```

Arguments

object	an object of class metavardtvar.
means	Logical. If means = TRUE, return means. Otherwise, the function returns raw estimates.
...	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

summary.metavarmeta *Summary Method for Object of Class metavarmeta*

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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