Package 'dynrautoVAR'

July 3, 2023

Title Automated VAR(1) in dynr

Version 0.9.1

Description Automatically fit VAR(1) models based on input data in 'dynr'.

URL https://github.com/jeksterslab/dynrautoVAR,
https://jeksterslab.github.io/dynrautoVAR/

BugReports https://github.com/jeksterslab/dynrautoVAR/issues

License GPL-3

Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

VignetteBuilder knitr

Depends R (>= 3.5.0)

Imports dynr, fclust, igraph

Suggests knitr, rmarkdown, testthat, rprojroot

RoxygenNote 7.2.3

NeedsCompilation no

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demo.dat *Demo Data*

Description

Demo Data

Usage

```
demo.dat
```

Format

A data frame with 3000 rows and 7 columns.

X1 Observed variable 1.

X2 Observed variable 2.

X3 Observed variable 3.

X4 Observed variable 4.

X5 Observed variable 5.

id ID variable for each individual (1 to 8).

time Time variable (1 to 300).

demo.dynr.var *Demo Output of dynr.var()*

Description

Demo Output of dynr.var()

Usage

```
demo.dynr.var
```

Format

A list of length ten. Each element of the list has the followin elemens

Betas Maybe we can put a description here.

ResidCov Maybe we can put a description here.

PCC Maybe we can put a description here.

PDC Maybe we can put a description here.

Res Maybe we can put a description here.

dynr.sub *Subgrouping Algorithm*

Description

Subgrouping Algorithm

Usage

```
dynr.sub(
  input,
  alpha = 0.05,
  params.cook = NULL,
  params.var = c("Betas", "ResidCov", "PDC", "PCC", "Both"),
  method = c("hard", "fuzz"),
  k = 2,
  m = 2
)
```

Arguments

input	list of dynr::dynr.cook() objects or output from dynr.var().
alpha	significance level for testing of transition matrix coefficients.
params.cook	parameters for clustering for dynr::dynr.cook() input.
params.var	parameters for clustering for dynr.var() input.
method	Subgrouping method.
k	number of clusters.
m	value of fuzzifier.

Details

I encapsulated dynrautoVAR into a temporary package so I can render the documentation and do some tests.

I made the following changes to the code.

1. I changed the name to dynr.sub() to match the other functions in the package.
2. I changed the argument inputs to input.
3. I removed the argument type and based the type on the class of the input.
4. I changed the argument p.val to alpha.
5. I changed the argument params to params.cook and var.opt`` to params.var‘.
6. I used styler::style_pkg() to style the code for added readability.

Author(s)

Jonathan Park

This function takes a list of outputs from `dynr::dynr.cook()` or output from `dynr.var()` and performs a subgrouping analysis. The output is a list of clusters.

`dynr.var` *Automatically Fit VAR(1) Models Based on Input Data*

Description

Automatically Fit VAR(1) Models Based on Input Data

Usage

```
dynr.var(
  dataframe,
  nv,
  time,
  id = NULL,
  dir = getwd(),
  alpha = 0.05,
  ini.mu = NULL,
  ini.cov = NULL,
  ini.beta = NULL,
  ini.loadings = NULL,
  use.mi = FALSE,
  aux = NULL
)
```

Arguments

`dataframe`	a data frame object of data that contain a column of subject ID numbers (i.e., an ID variable), a column indicating subject-specific measurement occasions (i.e., a TIME variable), at least one column of observed values, and any number of covariates. The TIME variable should contain subject-specific sequences of (subsets of) consecutively equally spaced numbers (e.g, 1, 2, 3, ...). That is, the program assumes that the input data.frame is equally spaced with potential missingness. If the measurement occasions for a subject are a subset of an arithmetic sequence but are not consecutive, NAs will be inserted automatically to create an equally spaced data set before estimation. If the data are fit to a continuous-time model, the TIME variables can contain subject-specific increasing sequences of irregularly spaced real numbers. Missing values in the observed variables shoud be indicated by NA.
`nv`	number of variables.
`time`	a character string of the name of the TIME variable in the data.

id	a character string of the name of the ID variable in the data.
dir	path for output files.
alpha	significance level for testing of transition matrix coefficients.
ini.mu	a vector of the starting or fixed values of the initial state vector.
ini.cov	a positive definite matrix of the starting or fixed values of the initial error covariance structure.
ini.beta	the matrix of starting/fixed values for the transition matrix in the specified linear dynamic model.
ini.loadings	matrix of starting or fixed values for factor loadings.
use.mi	if use.mi = TRUE, use dynr::dynr.mi() to address missing data in covariates.
aux	names of the auxiliary variables used in the imputation model if use.mi = TRUE.

Details

I encapsulated dynrautoVAR into a temporary package so I can render the documentation and do some tests.

I made the following changes to the code.

1. I change the argument data to dataframe to match dynr::dynr.data().
2. I change the argument ID to id to match dynr::dynr.data().
3. I changed the argument p.val to alpha.
4. I removed the default NULL value on arguments that require explicit values (dataframe, nv, and time).
5. I made all initial condition arguments begin with ini..
6. I set a default value for the argument dir to remove it from the argument handling section.
7. I cleaned up the argument handling section.
8. I changed result$estimation.result to results$estimation.result.
9. I gave the output a class of dynrVar for subsequent use of the output.
10. I used styler::style_pkg() to style the code for added readability.

Note that I mainly based the way I documented the arguments from functions in the dynr package used within this function. If you are amenable to the way I documented this function, I will proceed to documenting the rest.

Value

Returns a list of fitted VAR(1) models for each subject.

Author(s)

Jonathan Park

This function takes in a data.frame, fits individual models for each subject indicated by the ID variable and stores the fitted models as a list. Note that if ini.* arguments are not provided, initial values are set to null matrices or null vectors.

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