Package: MIIVefa (via r-universe)

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Type Package

Title Exploratory Factor Analysis Using Model Implied Instrumental
Variables

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Description Data-driven approach for Exploratory Factor Analysis (EFA)
that uses Model Implied Instrumental Variables (MIIVs). The
method starts with a one factor model and arrives at a
suggested model with enhanced interpretability that allows
cross-loadings and correlated errors.

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URL https://github.com/lluo0/MIIVefa/

BugReports https://github.com/lluo0/MIIVefa/issues

Depends R (>= 4.2.0)

Imports MIIVsem

Suggests knitr, rmarkdown, spelling, testthat (>= 3.0.0), mnormt,
lavaan, MPsychoR

VignetteBuilder knitr

Encoding UTF-8

Language en-US

LazyData true

RoxygenNote 7.2.3

Config/testthat/edition 3

Repository https://lluo0.r-universe.dev

RemoteUrl https://github.com/lluo0/miivefa

RemoteRef HEAD

RemoteSha 776c51c9c985b9c3907fdad070cddbc40be5b05f

Contents

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miivefa   *Exploratory Factor Analysis Using Model Implied Instrumental Variables.*

Description

This function is the user-level function that conducts miivefa.

Usage

```
miivefa(data,
        sigLevel = .05,
        scalingCrit = "sargan+factorloading_R2",
        correlatedErrors = NULL)
```

Arguments

data	A data frame, list or environment or an object coercible by as.data.frame to data frame. The most common application is to supply a data.frame.
sigLevel	The significance level threshold, default is .05.
scalingCrit	The criterion used to select the scaling indicators, default is 'factorloading_R2.' More details see select_scalingind
correlatedErrors	
	The pairs of variables whose errors should be correlated in the model search procedure, default is NULL.

Value

A miivefa object containing a vector of the recovered model syntax, and a miivsem object of model fit of the recovered model when applicable. The recovered model syntax and miivsem fit object can be accessed using output$model and output$fit. The output$model miivsem object contains both parameter estimation and model fit information.

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select_scalingind	*Exploratory Factor Analysis Using Model Implied Instrumental Variables.*

Description

This function selects a scaling indicator for an initial one factor model given a raw data frame matrix.

Usage

```
select_scalingind(data,
                  sigLevel = .05,
                  scalingCrit = "sargan+factorloading_R2",
                  correlatedErrors = NULL)
```

Arguments

`data`	A data frame, list or environment or an object coercible by as.data.frame to data frame. The most common application is to supply a data.frame.
`sigLevel`	The significance level threshold, default is .05.
`scalingCrit`	The criterion used to select the scaling indicators, default is 'sargan+factorloading_R2.'
`correlatedErrors`	
	The pairs of variables whose errors should be correlated in the model search procedure, default is NULL.

Details

`All possible criteria for scalingCrit` order: uses the first appearing variable as the scaling indicator

sargan: uses the variable with the least number of significant sargans as the scaling indicator. if multiple variables have the same least number of significant sargans, chooses the first appearing variable.

R2: uses the variable with the highest R2 as the scaling indicator. if multiple variables have the same R2 value, chooses the first appearing variable.

factor loading: uses the variable with the most number of significant factor loadings as the scaling indicator. if multiple variables have the same most number of significant factor loadings, chooses the first appearing variable.

sargan_R2: uses the variable with the least number of significant sargans as the scaling indicator. if multiple variables have the same least number of significant sargans, chooses the one with higher R2. if still multiple options, chooses the first appearing variable.

sargan_factorloading: uses the variable with the least number of significant sargans as the scaling indicator. if multiple variables have the same least number of significant sargans, chooses the one with more significant factor loadings. if still multiple options, chooses the first appearing variable.

sargan_factorloading_R2: uses the variable with the least number of significant sargans as the scaling indicator. if multiple variables have the same least number of significant sargans, chooses the one with more significant factor loadings. if still multiple options, chooses the one with higher R2.

factorloading_R2: uses the variable with the most number of significant factor loadings as the scaling indicator. if multiple variables have the same nist number of significant factor loadings, chooses the one with higher R2. if still multiple options, chooses the first appearing variable.

factorloading_sargan: uses the variable with the most number of significant factor loadings as the scaling indicator. if multiple variables have the same nist number of significant factor loadings, chooses the one with less significant sargans. if still multiple options, chooses the first appearing variable.

factorloading_sargan_R2: uses the variable with the most number of significant factor loadings as the scaling indicator. if multiple variables have the same nist number of significant factor loadings, chooses the one with less significant sargans. if still multiple options, chooses the one with higher R2.

sargan+factorloading: uses the variable with the least sum of significant sargans and non-signficant factor loadings. if multiple variables have the same least sum of significnat sargans and non-significant factor loadings, chooses the first appearing variable.

sargan+factorloading_R2: uses the variable with the least sum of significant sargans and non-signficant factor loadings. if multiple variables have the same least sum of significnat sargans and non-significant factor loadings, chooses the one with higher R2.

Value

A vector indicating the variable (column name) that is suggested to be the scaling indicator for the initial one factor model.

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