Proposals from J. Fox

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Abstract

Keywords: .

1. Porposals

I see three proposals

1. Make the adjusted covariance $\boldsymbol{\Phi}_A$ available.

2. Separate the calculation of $\boldsymbol{\Phi}_A$ from the KR adjustment.

3. write a `vcov()` method for the `modelLarge` such that $\boldsymbol{\Phi}_A$ is returned

2. Splitting KRmodcomp into several subtasks

It might be possible to split up `KRmodcomp` into several sub-functions, but not all of them are independent

Table 1: 4 subfunctions

function	input	output	main purpose
`KR_PhiA()`	`modelLarge`	$\boldsymbol{\Phi}_A, \mathbf{W}, \mathbf{P}_j$	calculation of the adjusted covariance matrix of $\hat{\beta}$
`KR_FPhiA()`	$\boldsymbol{\Phi}_A, \mathbf{L}$	$F^A = \frac{1}{d}(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta}_H)^\top \mathbf{L}^\top (\mathbf{L}\hat{\boldsymbol{\Phi}}_A \mathbf{L}^\top)^{-1} \mathbf{L}(\hat{\boldsymbol{\beta}} - \boldsymbol{\beta}_H)$	the F statistic using $\boldsymbol{\Phi}_A$
`KR_lambdaDf()`	`modelLarge`,$\mathbf{L}, \mathbf{W}, \mathbf{P}_j$	λ, m	The ajustment factor λ and the adjusted denominator degrees of freedom
`KR_pvalue`	F^A, λ, m	p-value KR-adjusted	

The last three functions after `KR_PhiA` can possibly be combined into one

where $\mathbf{L}$ can be replaced by `modelSmall`.

The actual `KRmodeomcp` would consist of the above functions.

Table 2: Two subfunctions

function	input	output	main purpose
KR_PhiA()	modelLarge	$\mathbf{\Phi}_A, \mathbf{W}, \mathbf{P}_j$	calculation of the adjusted covariance matrix of $\hat{\beta}$
KR_test()	$\mathbf{L}, \mathbf{\Phi}_A, \mathbf{W}, \mathbf{P}_j$	λ, m p-value	

3. Comments

Splitting up in two function we fulfil the first 2 proposals, which is reasonable. One might then

1. use $\mathbf{\Phi}_A$ for an F-test without KR adjustment

2. Do tests for several different modelSmalls with only one calculation of $\mathbf{\Phi}_A, \mathbf{W}, \mathbf{P}_j$. (but these matrices have to be saved)

With respect to the 3rd proposal I think that does not make sense at this moment. mer objects have already a vcov() method. So to add the calculation of $\mathbf{\Phi}_A$ for a modelLarge-mer object would require to enhance the vcov() function for mer objects, but then the user would have to specify which covariance matrix he wants.

One possibility would be that KR_PhiA returns a mer - KR object, that has a vcov() method returning $\mathbf{\Phi}_A$. I do not believe that this is wise at this moment to do so because our method is in comparing models not in creating special model-objects.

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