estat ginvariant — Tests for invariance of parameters across groups

Description

`estat ginvariant` is for use after estimation with `sem, group()`; see [SEM] **sem group options**.

`estat ginvariant` performs score tests (Lagrange multiplier tests) and Wald tests of whether parameters constrained to be equal across groups should be relaxed and whether parameters allowed to vary across groups could be constrained.

See Sörbom (1989) and Wooldridge (2010, 421–428).

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Syntax

`estat ginvariant` [, *options*]

options	Description
`showpclass(`*pclassname*`)`	restrict output to parameters in the specified parameter class
`class`	include joint tests for parameter classes
`legend`	include legend describing parameter classes

`collect` is allowed; see **[U] 11.1.10 Prefix commands**.

pclassname	Description
`scoef`	structural coefficients
`scons`	structural intercepts
`mcoef`	measurement coefficients
`mcons`	measurement intercepts
`serrvar`	covariances of structural errors
`merrvar`	covariances of measurement errors
`smerrcov`	covariances between structural and measurement errors
`meanex`	means of exogenous variables
`covex`	covariances of exogenous variables
`all`	all the above
`none`	none of the above

Options

`showpclass(`*pclassname*`)` displays tests for the classes specified. `showpclass(all)` is the default.

`class` displays a table with joint tests for group invariance for each of the nine parameter classes.

`legend` displays a legend describing the parameter classes. This option may only be used with the `class` option.

Remarks and examples

See [SEM] **Example 22**.

Score tests are not available after `gsem`; therefore, `estat ginvariant` is not for use after estimation with `gsem, group()`.

Stored results

`estat ginvariant` stores the following in `r()`:

Scalars

`r(N_groups)`	number of groups

Matrices

`r(nobs)`	sample size for each group
`r(test)`	Wald and score tests
`r(test_pclass)`	parameter classes corresponding to `r(test)`
`r(test_class)`	joint Wald and score tests for each class

References

Baldwin, S. 2019. *Psychological Statistics and Psychometrics Using Stata*. College Station, TX: Stata Press.

MacDonald, K. 2016. Group comparisons in structural equation models: Testing measurement invariance. *The Stata Blog: Not Elsewhere Classified*. https://blog.stata.com/2016/08/23/group-comparisons-in-structural-equation-models-testing-measurement-invariance/.

Sörbom, D. 1989. Model modification. *Psychometrika* 54: 371–384. https://doi.org/10.1007/BF02294623.

Wooldridge, J. M. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press.

Also see

[SEM] **sem** — Structural equation model estimation command

[SEM] **sem postestimation** — Postestimation tools for sem

[SEM] **estat mindices** — Modification indices

[SEM] **estat scoretests** — Score tests

[SEM] **Example 22** — Testing parameter equality across groups

[SEM] **Methods and formulas for sem** — Methods and formulas for sem