Description

sem has a noxconditional option that you may rarely wish to specify. The option is described below.

Syntax

sem ... [, ... noxconditional ...]

Option

noxconditional states that you wish to include the means, variances, and covariances of the observed exogenous variables among the parameters to be estimated by sem.

Remarks and examples

Remarks are presented under the following headings:

> *What is x conditional?*
> *When to specify noxconditional*
> *Option forcexconditional (a technical note)*

What is x conditional?

In many cases, sem does not include the means, variances, and covariances of observed exogenous variables among the parameters to be estimated. When sem omits them, the estimator of the model is said to be x conditional. Rather than estimating the values of the means, variances, and covariances, sem uses the separately calculated observed values of those statistics. sem does this to save time and memory.

sem does not use the x-conditional calculation when it would be inappropriate.

The noxconditional option prevents sem from using the x-conditional calculation. You specify noxconditional on the sem command:

    . sem ..., ... noxconditional

Do not confuse the x-conditional calculation with the assumption of conditional normality discussed in [SEM] **Intro 4**. The x-conditional calculation is appropriate even when the assumption of conditional normality is inappropriate.

When to specify noxconditional

It is never inappropriate to specify the `noxconditional` option. Be aware, however:

1. If you are using the default `method(ml)`, estimated point estimates and standard errors will be the same.

2. If you are using `method(adf)`, estimated point estimates and standard errors will be slightly different, asymptotically equivalent, and there is no reason to prefer one set of estimates over the other.

3. If you are using `method(mlmv)`, the situation is the same as in statement 1.

4. Regardless of the estimation method used, calculation of results will require more computer time and memory. The memory requirements increase quadratically with the total number of estimated parameters in your model. If you have k_1 observed exogenous variables and k_2 latent exogenous variables, the number of added parameters from `noxconditional` is $k_1 + k_1(k_1 + 1)/2 + k_1 k_2$. The resulting total memory requirements can be so great as to require more memory than your computer can provide.

To make statements 1–4 true, there are two cases when `sem` specifies `noxconditional` for you:

1. `sem` defaults to `noxconditional` whenever you constrain a mean, variance, or covariance of an observed exogenous variable. For example,

   ```
   . sem ..., ... means(x1@m x2@m)
   . sem ..., ... var(x1@v x2@v)
   . sem ..., ... cov(x1*x2@c x1*x3@c)
   . sem ..., ... covstruct(_OEx, diagonal)
   ```

   See [SEM] **sem and gsem path notation** and [SEM] **sem and gsem option covstructure( )**.

2. `sem` defaults to `noxconditional` whenever you use `method(mlmv)` and there are missing values among the observed exogenous variables.

There are only three reasons for you to specify the `noxconditional` option:

1. Specify `noxconditional` if you subsequently wish to test means, variances, or covariances of observed exogenous variables with postestimation commands. For example,

   ```
   . sem ..., ... noxconditional
   . sem, coeflegend
   . test _b[/means(x1)] == _b[/means(x2)]
   ```

2. Specify `noxconditional` if you are fitting a model with the `group()` option.

3. Specify `noxconditional` if you also specify the `ginvariant()` option, and you want the `ginvariant()` classes `meanex`, `covex`, or `all` to include the observed exogenous variables. For example,

   ```
   . sem ..., ... by(agegrp) ginvariant(all) noxconditional
   ```

You may also wish to specify `noxconditional` when comparing results with those from other packages. Many packages use the `noxconditional` approach when using an estimation method other than maximum likelihood (ML). Correspondingly, most packages use the x-conditional calculation when using ML.

Option forcexconditional (a technical note)

In addition to `noxconditional`, `sem` has a `forcexconditional` option:

sem ... $\big[$, ... forcexconditional ... $\big]$

This option turns off `sem`'s switching away from the x-conditional calculation when that is required. Do not specify this option unless you are exploring the behavior of x-conditional calculation in cases where it is theoretically inappropriate.

Also see

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