

**estat vce** — Display covariance matrix estimates

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## Description

`estat vce` displays the covariance or correlation matrix of the parameter estimates of the previous model.

## Quick start

Display variance–covariance matrix of the estimates (VCE) from the previous model

```
estat vce
```

Matrix of correlations rather than covariances

```
estat vce, correlation
```

As above, but report correlations using three decimal places

```
estat vce, correlation format(%6.3f)
```

After fitting a multiple-equation model, display VCE for each equation in separate blocks

```
estat vce, block
```

Show VCE for equation `y1` only

```
estat vce, equation(y1)
```

## Menu for estat

Statistics > Postestimation

## Syntax

```
estat vce [ , estat_vce_options ]
```

<i>estat_vce_options</i>	Description
<code>covariance</code>	display as covariance matrix; the default
<code>correlation</code>	display as correlation matrix
<code>equation(<i>spec</i>)</code>	display only specified equations
<code>block</code>	display submatrices by equation
<code>diag</code>	display submatrices by equation; diagonal blocks only
<code>format(<i>%fmt</i>)</code>	display format for covariances and correlations
<code>nolines</code>	suppress lines between equations
<code>display_options</code>	control display of omitted variables and base and empty cells

## Options

`covariance` displays the matrix as a variance–covariance matrix; this is the default.

`correlation` displays the matrix as a correlation matrix rather than a variance–covariance matrix. `rho` is a synonym.

`equation(spec)` selects part of the VCE to be displayed. If *spec* is *eqlist*, the VCE for the listed equations is displayed. If *spec* is *eqlist1* \ *eqlist2*, the part of the VCE associated with the equations in *eqlist1* (rowwise) and *eqlist2* (columnwise) is displayed. If *spec* is \*, all equations are displayed. `equation()` implies `block` if `diag` is not specified.

`block` displays the submatrices pertaining to distinct equations separately.

`diag` displays the diagonal submatrices pertaining to distinct equations separately.

`format(%fmt)` specifies the number format for displaying the elements of the matrix. The default is `format(%10.0g)` for covariances and `format(%8.4f)` for correlations. See [U] 12.5 **Formats: Controlling how data are displayed** for more information.

`nolines` suppresses lines between equations.

*display\_options*: `noomitted`, `noemptycells`, `baselevels`, `allbaselevels`; see [R] **estimation options**.

## Remarks and examples

[stata.com](http://www.stata.com)

`estat vce` allows you to display the VCE of the parameters of the previously fit model, as either a covariance matrix or a correlation matrix.

### ► Example 1

Returning to the [example](#) in [R] **estat ic**, here we display the covariance matrix of the parameters of the `mlogit` model by using `estat vce`.

```
. use http://www.stata-press.com/data/r14/sysdsn1
(Health insurance data)
. mlogit insure age male nonwhite
(output omitted)
. estat vce, block
```

Covariance matrix of coefficients of mlogit model

covariances of equation Indemnity

	o. age	o. male	o. nonwhite	o. _cons
o.age	0			
o.male	0	0		
o.nonwhite	0	0	0	
o._cons	0	0	0	0

covariances of equation Prepaid (row) by equation Indemnity (column)

	o. age	o. male	o. nonwhite	o. _cons
age	0			
male	0	0		
nonwhite	0	0	0	
_cons	0	0	0	0

covariances of equation Prepaid

	age	male	nonwhite	_cons
age	.00003711			
male	-.00015303	.0402091		
nonwhite	-.00008948	.00470608	.04795135	
_cons	-.00159095	-.00398961	-.00628886	.08000462

covariances of equation Uninsure (row) by equation Indemnity (column)

	o. age	o. male	o. nonwhite	o. _cons
age	0			
male	0	0		
nonwhite	0	0	0	
_cons	0	0	0	0

covariances of equation Uninsure (row) by equation Prepaid (column)

	age	male	nonwhite	_cons
age	.00001753	-.00007926	-.00004564	-.00076886
male	-.00007544	.02188398	.0023186	-.00145923
nonwhite	-.00004577	.00250588	.02813553	-.00263872
_cons	-.00077045	-.00130535	-.00257593	.03888032

covariances of equation Uninsure

	age	male	nonwhite	_cons
age	.00013022			
male	-.00050406	.13248095		
nonwhite	-.00026145	.01505449	.16861327	
_cons	-.00562159	-.01686629	-.02474852	.28607591

The `block` option is particularly useful for multiple-equation estimators. The first block of output here corresponds to the VCE of the estimated parameters for the first equation—the square roots of the diagonal elements of this matrix are equal to the standard errors of the first equation’s parameters. Similarly, the final block corresponds to the VCE of the parameters for the second equation. The middle block shows the covariances between the estimated parameters of the first and second equations. ◀

## Stored results

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

Matrices	
<code>r(V)</code>	VCE or correlation matrix

## Reference

Hamilton, L. C. 2013. *Statistics with Stata: Updated for Version 12*. 8th ed. Boston: Brooks/Cole.

## Also see

[R] [estat](#) — Postestimation statistics

[R] [estat ic](#) — Display information criteria

[R] [estat summarize](#) — Summarize estimation sample