matrix get — Access system matrices

Description

The `get()` matrix function obtains a copy of an internal Stata system matrix. Some system matrices can also be obtained more easily by directly referring to the returned result after a command. In particular, the coefficient vector can be referred to as `e(b)`, the variance–covariance matrix of estimators as `e(V)`, and the constraints matrix as `e(Cns)` after an estimation command.

`mat_put_rr` is a programmer’s command that posts `matname` as the internal `Rr` matrix. `matname` must have one more than the number of columns in the `e(b)` or `e(V)` matrices. The extra column contains the `r` vector, and the earlier columns contain the `R` matrix for the Wald test

\[ Rb = r \]

The matrix … `get(Rr)` command provides a way to obtain the current `Rr` system matrix.

Syntax

Obtain copy of internal Stata system matrix

```
matrix [ define ] matname = get(systemname)
```

Post matrix as internal `Rr` matrix

```
mat_put_rr matname
```

where `systemname` is

- `_b` coefficients after any estimation command
- `VCE` covariance matrix of estimators after any estimation command
- `Rr` constraint matrix after `test`; see [R] `test`
- `Cns` constraint matrix after any estimation command

Remarks and examples

`get()` obtains copies of matrices containing coefficients and the covariance matrix of the estimators after estimation commands (such as `regress` and `probit`) and obtains copies of matrices left behind by other Stata commands. The other side of `get()` is `ereturn post`, which allows ado-file estimation commands to post results to Stata’s internal areas; see [P] `ereturn`. 
Example 1

After any model-fitting command, the coefficients are available in \(_b\) and the variance–covariance matrix of the estimators in \(VCE\).

```
. use https://www.stata-press.com/data/r16/auto
(1978 Automobile Data)
. regress price weight mpg
(output omitted)
```

Here we can directly use \(e(b)\) and \(e(V)\) to obtain the matrices:

```
. matrix list e(b)
e(b)[1,3]
       weight       mpg       _cons
      y1  1.7465592  -49.512221   1946.0687
.
. matrix list e(V)
symmetric e(V)[3,3]
         weight       mpg       _cons
       weight  .41133468
       mpg     44.601659   7422.863
       _cons  -2191.9032  -292759.82  12938766
```

We can also use the \texttt{matrix get()} function to obtain these matrices:

```
. matrix b = get(_b)
. matrix V = get(VCE)
. matrix list b
b[1,3]
       weight       mpg       _cons
      y1  1.7465592  -49.512221   1946.0687
.
. matrix list V
symmetric V[3,3]
         weight       mpg       _cons
       weight  .41133468
       mpg     44.601659   7422.863
       _cons  -2191.9032  -292759.82  12938766
```

The columns of \(b\) and both dimensions of \(V\) are properly labeled.
Example 2

After `test`, the restriction matrix is available in `Rr`. Having just estimated a regression of `price` on `weight` and `mpg`, we will run a test and then get the restriction matrix:

```
. test weight=1, notest
   ( 1) weight = 1
. test mpg=40, accum
   ( 1) weight = 1
   ( 2) mpg = 40
       F(  2,  71) =  6.29
       Prob > F =  0.0030
. matrix rxtr=get(Rr)
. matrix list rxtr
rxtr[2,4]
    c1  c2  c3  c4
   r1  1  0  0  1
   r2  0  1  0 40
```

Also see

[P] `matrix` — Introduction to matrix commands
[U] 13.5 Accessing coefficients and standard errors
[U] 14 Matrix expressions