diag( ) — Create diagonal matrix

Description   Syntax   Remarks and examples   Conformability   Diagnostics   Also see

Description

`diag()` creates diagonal matrices.

`diag(`Z`)`, Z a matrix, extracts the principal diagonal of Z to create a new matrix. Z must be square.

`diag(`z`)`, z a vector, creates a new matrix with the elements of z on its diagonal.

Syntax

numeric matrix `diag(`*numeric matrix Z*`)`

numeric matrix `diag(`*numeric vector z*`)`

Remarks and examples

Do not confuse `diag()` with its functional inverse, `diagonal()`; see [M-5] **diagonal( )**. `diag()` creates a matrix from a vector (or matrix); `diagonal()` extracts the diagonal of a matrix into a vector.

Use of `diag()` should be avoided because it wastes memory. The colon operators will allow you to use vectors directly:

Desired calculation	Equivalent
`diag(`v`)*`X,	
v is a column	v`:*`X
v is a row	v`':*`X
v is a matrix	`diagonal(`v`):*`X
X`*diag(`v`)`	
v is a column	X`:*`v`'`
v is a row	X`:*`v
v is a matrix	X`:*diagonal(`v`)'`

In the above table, it is assumed that v is real. If v might be complex, the transpose operators that appear must be changed to `transposeonly()` calls, because we do not want the conjugate. For instance, v`':*`X would become `transposeonly(`v`):*`X.

Conformability

`diag(`Z`)`:

Z:	$m \times n$
result:	$\min(m, n) \times \min(m, n)$

`diag(`z`)`:

z:	$1 \times n$ or $n \times 1$
result:	$n \times n$

Diagnostics

None.

Also see

[M-5] **_diag( )** — Replace diagonal of a matrix

[M-5] **diagonal( )** — Extract diagonal into column vector

[M-5] **isdiagonal( )** — Whether matrix is diagonal

[M-4] **Manipulation** — Matrix manipulation

For suggested citations, see the FAQ on citing Stata documentation.