Solvers — Functions to solve AX=B and to obtain A inverse

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Description

The above functions solve $AX = B$ for X and solve for A^{-1}.

Remarks and examples

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Matrix solvers can be used to implement matrix inverters, and so the two nearly always come as a pair.

Solvers solve $AX = B$ for X. One way to obtain A^{-1} is to solve $AX = I$. If $f(A, B)$ `solves` AX=B, then $f(A, \texttt{I(rows}(A)\texttt{))}$ solves for the inverse. Some matrix inverters are in fact implemented this way, although usually custom code is written because memory savings are possible when it is known that $B = I$.

The pairings of inverter and solver are

inverter	solver
`invsym()`	(none)
`cholinv()`	`cholsolve()`
`cholinvlapacke()`	`cholsolvelapacke()`
`luinv()`	`lusolve()`
`qrinv()`	`qrsolve()`
`pinv()`	`svsolve()`

Also see

[M-4] **Intro** — Categorical guide to Mata functions