SUR

SUR (DEBUG, NOHETERO, NOITERU, MAXITW=0,
COVU=*own or covariance matrix of residuals,* NOROBUST, nonlinear options)
list of equation names ;

Function:

SUR obtains seemingly unrelated regression estimates of a set of nonlinear equations. It is a special case of LSQ with the options set for SUR estimation. The LSQ section has a more complete description of the command.

Method:

Seemingly unrelated regression estimates are obtained by estimating a set of nonlinear equations with cross-equation constraints imposed, but with a diagonal covariance matrix of the disturbances across equations. These parameter estimates are used to form a consistent estimate of the covariance matrix of the disturbances, which is then used as a weighting matrix when the model is reestimated to obtain new values of the parameters. These estimates are consistent and asymptotically normal, and, under some conditions, asymptotically more efficient than the single equation estimates.

The seemingly unrelated regression method is a special case of generalized least squares with a residual covariance matrix of a particular structure:

$$V = S \otimes I_T$$

It is sometimes called Zellner's method since it was originally proposed for linear models by Arnold Zellner, or the Aitken estimator (of which it is a special case).

References:

Judge et al, **The Theory and Practice of Econometrics,** John Wiley and Sons, New York, 1980, pp. 245-250.

Theil, Henri, **Principles of Econometrics,** John Wiley and Sons, New York, 1971, pp. 294-311.

Zellner, Arnold, "An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests of Aggregation Bias," **JASA** 57 (1962), pp. 348-368.

Zellner, Arnold, "Estimators for Seemingly Unrelated Regression Equations: Some Exact Finite Sample Results," **JASA** 58 (1963), pp. 977-992.