Applied Economics

Instrumental Variables Estimation in `gretl`

Basic commands and functions

Basic commands and functions to estimate IV

- `tsls`: compute 2SLS
- `omit/add`: tests joint significance

tsls *depvar indepvars* ; *instruments* −−robust

- Instrumental Variable estimators using using least squares estimators in two stages (2SLS)
- *indepvars* is the complete list of regressors, including all endogenous variables and the constant.
  all exogenous regressors should appear in both lists.
- *instruments* is the complete list of exogenous variables and / or predetermined.
- el # of instruments must be equal to or greater than # of regressors.
- all exogenous regressors should appear in both lists.

Additional results in tsls

- the Hausman test and, if the model is overidentified, the Sargan test.
- a model is overidentified if the # instrument is $>$ # regressors.
- the Hausman test, the null hypothesis is that the OLS estimators are consistent.
- Sargan test, the null hypothesis is that all instruments are valid.

Goodness of fit and additional methods

- The R^2 reported is the squared correlation coefficient between the dependent variable and the predicted values.
- the model can be estimated using maximum likelihood (−−liml)
- or by using generalized method of moments (−−gmm)
- see help tsls for details.

omit *varlist* −−wald −−quiet −−inst −−both

using omit produce an ambiguity, whether the variables in *varlist* be omitted as regressors, instruments or both.

- by default *varlist* are removed from the list of regressors, but remain as instruments.
- if you add −−inst instruments they are removed, but remain as regressors.
- if you add −−both they are completely eliminated from the model.
- these two options are incompatible with the option −−wald
- if one or more instruments are omitted, the model must be reestimated.

add *varlist* ––quiet ––inst ––both

- by default *varlist* are added as endogenous regressors
- if you add ––inst they are included as instruments.
- if you add ––both they are included as exogenous regressors.