The programs implement a range of advanced econometric estimation and testing procedures for use in the Stata statistical software environment. Brief abstracts are provided below. Full details on the use of the programs along with examples and references are available after installation by using Stata's help system:

```
help avar
help weakiv
help actest
help ivreg2h
help ranktest
help ivreg2
```

The software packages submitted are published on Statistical Software Components ("SSC") via RePEc/IDEAS. The URLs below are to the RePEc pages for each package. The RePEc pages contain the Stata code and help files along with an abstract, various bibliographic details, and miscellaneous other items such as certification scripts. All of the software packages have been in continuous development since their original introduction. Dates of first publication and dates of last revision are given on the RePEc pages.

Download and installation requires the Stata statistical software environment of version 10 or higher. Installation can be done in one of two ways:

(1) (Recommended) From within Stata using the ssc install command:

```
ssc install avar
ssc install weakiv
ssc install actest
ssc install ivreg2h
ssc install ranktest
ssc install ivreg2
```

(2) (Not recommended) From the RePEc URLs provided below, download the components into the folder designated by Stata for ado files (typically C:\ado\personal).

NB: most user downloads are via method (1) above. RePEc's download statistics track only method (2).

Order is in reverse order of date of first publication. The date of the most recent update is also noted. All of the software packages have been in continuous development since their original introduction.

1. AVAR

Christopher F Baum & Mark E Schaffer, 2013. "AVAR: Stata module to perform asymptotic covariance estimation for iid and non-iid data robust to heteroskedasticity, autocorrelation, 1- and 2-way clustering, and common cross-panel autocorrelated disturbances", Statistical Software Components S457668.

URL: http://ideas.repec.org/c/boc/bocode/s457689.html

Last revision 1 Sept 2013

Abstract: avar is a routine for estimating S, the asymptotic variance of (1/N)*Z'e, where Z is an NxL matrix of L variables, e is an Nxp matrix of p variables, and N is the sample size. avar can estimate VCEs for single and multiple equations that are robust to various violations of the assumption of iid data, including heteroskedasticity, autocorrelation, 1- and 2-way clustering, common cross-panel

disturbances (Driscoll-Kraay), within-panel arbitrary autocorrelation (Kiefer), etc. It supports time-series and panel data.

2. WEAKIV

Keith Finlay & Leandro Magnusson & Mark E Schaffer, 2013. "WEAKIV: Stata module to perform weak-instrument-robust tests and confidence intervals for instrumental-variable (IV) estimation of linear, probit and tobit models," Statistical Software Components S457684.

URL: http://ideas.repec.org/c/boc/bocode/s457684.html

Last revision 25 July 2013

Abstract: weakiv calculates minimum distance (MD) versions of weak-instrument-robust tests of the coefficient on the endogenous variable in an instrumental variables (IV) estimation. weakiv supports estimation of linear IV models by ivregress, ivreg2 and ivreg2h, and estimation of probit and tobit IV models by ivprobit and ivtobit. In an exactly-identified model with one instrument, weakiv reports the MD version of the Anderson-Rubin (AR) test statistic. When the IV model contains more than one instrument (the model is overidentified), weakiv also conducts the MD versions of the conditional likelihood ratio (CLR) test, the Lagrange multiplier K test, the J overidentification test, and a combination of the K and overidentification tests (the K-J test). weakiv also inverts these tests to construct confidence intervals that are robust to weak identification. For linear IV models, weakiv supports all the variance-covariance estimators supported by ivregress or ivreg2 (robust, cluster-robust, HAC, 2-way clustering, Kiefer and Driscoll-Kraay SEs, etc.). weakiv provides a graphing facility for visual examination and presentation of rejection frequencies and confidence intervals based on these tests.

3. ACTEST

Christopher F Baum & Mark E Schaffer, 2013. "ACTEST: Stata module to perform Cumby-Huizinga general test for autocorrelation in time series," Statistical Software Components S457668.

URL: http://ideas.repec.org/c/boc/bocode/s457668.html

Last revision 25 Jul 2013.

Abstract: actest performs the general specification test of serial correlation in a time series proposed by Cumby and Huizinga. It can be applied to a univariate time series or as a postestimation command after OLS or instrumental variables (IV) estimation. The null hypothesis of the test is that the time series is a moving average of known order q, which could be zero or a positive value. The test considers the general alternative that autocorrelations of the time series are nonzero at lags greater than q. The test is general enough to test the hypothesis that the time series has no serial correlation (q=0) or the null hypothesis that serial correlation in the time series exists, but dies out at a known finite lag (q>0).

4. IVREG2H

Christopher F Baum & Mark E Schaffer, 2012. "IVREG2H: Stata module to perform instrumental variables estimation using heteroskedasticity-based instruments," Statistical Software Components S457555.

URL: http://ideas.repec.org/c/boc/bocode/s457555.html

Last revision 11 August 2013

Abstract: ivreg2h estimates an instrumental variables regression model providing the option to generate instruments using Lewbel's method. This technique allows the identification of structural parameters in regression models with endogenous or mismeasured regressors in the absence of traditional identifying information, such as external instruments or repeated measurements. Identification is achieved in this context by having regressors that are uncorrelated with the product of heteroskedastic errors, which is a feature of many models where error correlations are due to an unobserved common factor. Using this form of Lewbel's method, instruments may be constructed as simple functions of the model's data. This approach may thus be applied when no external instruments are available, or, alternatively, used to supplement external instruments to improve the efficiency of the IV estimator. Supplementing external instruments can also allow Sargan-Hansen tests of the orthogonality conditions or overidentifying restrictions to be performed, which would not be available in the case of exact identification by external instruments.

5. RANKTEST

Frank Kleibergen & Mark E Schaffer, 2007. "RANKTEST: Stata module to test the rank of a matrix using the Kleibergen-Paap rk statistic," Statistical Software Components S456865.

URL: http://ideas.repec.org/c/boc/bocode/s456865.html

Last revision 19 May 2013

Abstract: ranktest implements the Kleibergen-Paap rk test for the rank of a matrix. Tests of the rank of a matrix have many practical applications. For example, in econometrics the requirement for identification is the rank condition, which states that a particular matrix must be of full column rank. Another example from econometrics concerns cointegration in vector autoregressive (VAR) models; the Johansen trace test is a test of a rank of a particular matrix. The Kleibergen-Paap rk statistic is a generalization of the Anderson canonical correlation rank test to the case of a non-Kronecker covariance matrix. The implementation in ranktest will calculate rk statistics that are robust to various forms of heteroskedasticity, autocorrelation, and clustering.

6. IVREG2

Christopher F Baum & Mark E Schaffer & Steven Stillman, 2002. "IVREG2: Stata module for extended instrumental variables/2SLS and GMM estimation," Statistical Software Components S425401.

URL: http://ideas.repec.org/c/boc/bocode/s425401.html

Last revision 28 Jul 2013

Abstract: ivreg2 provides extensions to Stata's official ivregress and newey. Its main capabilities: two-step feasible GMM estimation; continuously updated GMM estimation (CUE); LIML and k-class estimation; automatic output of the Hansen-Sargan or Anderson-Rubin statistic for overidentifying restrictions; C statistic test of exogeneity of subsets of instruments (orthog() option); kernel-based autocorrelation-consistent (AC) and heteroskedastic and autocorrelation-consistent (HAC) estimation, with user-specified choice of kernel; Cragg's "heteroskedastic OLS" (HOLS) estimator; default reporting of large-sample statistics (z and chi-squared rather than t and F); small option to report small-sample statistics; first-stage regression reported with Angrist-Pisckhe F-tests and R-squareds; Kleibergen-Paap and Cragg-Donald tests for underidentification and weak instruments; tests for redundancy of instruments; two-way clustering of standard errors; Kiefer and Driscoll-Kraay standard errors. ivreg2 can also be used for ordinary least squares (OLS) estimation using the same command syntax as Stata's official regress and newey.