

Econometrics and Statistics

EViews 7 offers a variety of additions and improvements to its extensive set of econometric and statistical features. The following is a brief outline of the most important new features:

Computation

- Interpolation (Linear, Log-linear, Catmul-Rom Spline, Cardinal Spline) is offered as a series procedure
- Whitening is now offered as a series or group procedure
- Long-run variances and covariances may be calculated from a series or group of series
- Variance ratio testing may be performed on a series
- Single equation tests for cointegration

Estimation

- Improved single equation TSLS/IV and GMM estimation (featuring new LIML and K-class estimators)
- Single equation Cointegrating Regression
- Generalized Linear Models
- New methods of specifying weights for weighted least squares

Testing and Diagnostics

- Expanded choice of coefficient covariance estimators for single equation regression models
- New set of post-estimation diagnostics for single equation regression models
- Additional test and diagnostic views for TSLS and GMM estimation

Interpolation

Linear, Log-linear, Catmul-Rom Spline, Cardinal Spline interpolation are offered as a series procedure. You will find this feature using the **Proc** menu for a series object.



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Whitening

EViews now offers easy-to-use tools for whitening series or groups of series using AR or VAR regressions. Whitening can be performed with or without a constant and row weights, using a fixed or info-criterion based lag selection. The coefficients of the whitening regression may optionally be saved.

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Long-run Covariances

You may now compute estimates of the long-run variance of a series or the long-run covariance matrix of a group of series. You will find this feature using the **View** menu for a series or a group object.

Long-run covariance estimates are central to calculation of efficient GMM weighting matrices (Hansen 1982), heteroskedastic and autocorrelation (HAC) robust standard errors (Newey and West 1987), and is employed in unit root (Phillips and Perron 1988) and cointegration analysis (Phillips and Hansen 1990, Hansen 1992b). EViews offers powerful, easy-to-use tools for computing, displaying, and saving the long-run covariance (variance) matrix of a single series or all of the series in a group object. You may compute one-sided or symmetric long-run covariances using nonparametric kernel (Newey-West 1987, Andrews 1991), parametric VARHAC (Den Haan and Levin 1997), and prewhitened kernel (Andrews and Monahan 1992) methods. In addition, EViews supports Andrews (1991) and Newey-West (1994) automatic bandwidth selection methods for kernel estimators, and information criteria based lag length selection methods for VARHAC and prewhitening estimation.

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Variance Ratio Test

EViews 7 allows you to perform the Lo and MacKinlay variance ratio test for homoskedastic and heteroskedastic random walks, using the asymptotic normal distribution (Lo and MacKinlay, 1988) or wild bootstrap (Kim, 2006) to evaluate statistical significance. In addition, you may compute the rank, rank-score, or sign-based forms of the test (Wright, 2000), with bootstrap evaluation of significance. In addition, EViews offers Wald and multiple comparison variance ratio tests (Richardson and Smith, 1991; Chow and Denning, 1993), so you may perform joint tests of the variance ratio restriction for several intervals.



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Cointegration Tests

EViews 7 offers support for Engle and Granger (1987) and Phillips and Ouliaris (1990) residual-based tests, Hansen's (1992b) instability test, and Park's (1992) added variables test. The residual based tests may be computed as a *View of a Group object*, or as a diagnostic view for an equation estimated using one of the cointegrating regression techniques outlined in "Cointegrating Regression" below. The Hansen instability test and Park added variables tests may only be computed as part of the equation view.

Coefficient Covariance Calculation

EViews 7 offers an expanded choice of options for computing standard errors for single equation regression estimates.

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Expanded Post-Estimation Diagnostics

EViews 7 offers an expanded selection of post-estimation diagnostics for single equation regression models. All of these new diagnostics can be accessed from the **View** menu of an equation.

Four new **coefficient diagnostics** are offered:

- Standardized coefficients and coefficient elasticities
- Confidence intervals
- Variance inflation factors
- Coefficient variance decompositions

New **stability** diagnostics are offered:

- Influence statistics
- Leverage plots

A new **ARMA diagnostic** is provided:



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- You may now examine the ARMA frequency spectrum from an estimated single equation

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Instrumental Variables and GMM Estimation

EViews 7 has expanded the robust standard error options for single equations estimated by two-stage least squares, and an option to adjust those standard errors for degrees of freedom. There is also now option to not include a constant as an instrument. Limited Information Maximum Likelihood (LIML) and K-class estimation is now available as a single equation estimation method. To estimate a LIML specification open the Equation estimation dialog, and select **LIML - Limited Information Maximum Likelihood and Kclass** in the **Method** combo. Single equation GMM has been completely overhauled. There are an expanded set of options for the HAC weighting matrix type, the ability to not include a constant as an instrument, the ability to estimate via continuously updating estimation (CUE), and an expanded set of standard error options, including Windmeijer standard errors. You may also specify observation weights.

GMM now offers the ability to save the weighting matrix from estimation and standard error computation, or to use a user-supplied weighting matrix as part of estimation. This feature allows the user estimate a GMM model using the weighting matrix from a previous GMM model.

All three types of IV estimation offer new diagnostics and tests, including an Instrument Orthogonality Test, a Regressor Endogeneity Test, a Weak Instrument Test, and a GMM specific breakpoint test. These diagnostics are available from the **View** menu of an equation.

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Cointegrating Regression

EViews 7 offers a full set of tools for estimating and testing single equation cointegrating relationships. Three fully efficient estimation methods, Fully Modified OLS (Phillips and Hansen 1992), Canonical Cointegrating Regression (Park 1992), and Dynamic OLS (Saikkonen 1992, Stock and Watson 1993) are described, along with various cointegration testing procedures: Engle and



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Granger (1987) and Phillips and Ouliaris (1990) residual-based tests, Hansen's (1992b) instability test, and Park's (1992) added variables test.

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Generalized Linear Models

EViews 7 supports estimation of Generalized Linear Models (Nelder and McCullagh, 1983). This class of models generalizes classical linear regression to include a broad range of models that have proven to be useful in practice. Among these models are log-linear regression, standard probit and logit, probit and logit specified by proportions, and regression for count or survival data.

To estimate a specification using GLM open the Equation estimation dialog, and select **GLM - Generalized Linear Models** in the **Method** combo.

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Weighted Least Squares

EViews 7 offers new methods of specifying weights for weighted least squares, along with newly added support for observation weighting in GMM specifications.

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