EViews 9 Getting Started

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What's New in EViews 9

EViews 9 features a wide range of exciting changes and improvements. The following is an overview of the most important new features in Version 9.

General EViews Interface

- Command capture from the interactive interface ("Command Capture," on page 13).
- Dockable command and capture window ("Window Docking," on page 14)
- Database and workfile object preview ("Database and Workfile Object Preview," on page 15).

The following are mentioned elsewhere in this document, but touch on interface in important ways.

- Graph pan/zoom ("Graph Pan and Zoom" on page 21).
- Multiple graph viewing slideshow ("Multi-graph Slideshow" on page 23).

Data Handling

- Enhanced import and linking of external data ("Enhanced import and linking of data," on page 16).
- A powerful new FRED database interface ("New FRED Database Interface" on page 17).
- Direct read and write access to data stored on cloud drive services ("Cloud Drive Support," on page 18).
- Dated data table template support for saving and importing customized settings ("Dated Data Table Templates," on page 19).
- New frequency conversion methods ("Expanded Frequency Conversion Interpolation Methods" on page 20).

Graphs, Tables, and Spools

- Graph pan/zoom ("Graph Pan and Zoom" on page 21).
- Multiple graph viewing slideshow ("Multi-graph Slideshow" on page 23).
- Improved mixed graph type ("Improved Mixed Graph Type" on page 26).
- Rectangle and ellipse drawing ("Rectangle and Ellipse Drawing" on page 27).

- Data-based anchoring of arrows, rectangles, and ellipses ("Data-based Anchoring" on page 28).
- Tables, graphs, and spools may now be saved in LaTeX format ("LaTeX Output" on page 28).

Econometrics and Statistics

Computation

- Automatic ARIMA forecasting of a series ("Automatic ARIMA Forecasting" on page 30).
- Forecast evaluation and combination testing ("Forecast Evaluation" on page 30).
- Forecast averaging ("Forecast Averaging" on page 31).
- VAR Forecasting ("VAR Forecasting" on page 32).

Estimation

- Autoregressive Distributed Lag regression (ARDL) with automatic lag selection ("Autoregressive Distributed Lag (ARDL) Models" on page 34).
- Maximum Likelihood and GLS ARMA estimation ("ML and GLS ARMA" on page 35)
- Fractional Integration (ARFIMA) model estimation ("Fractional Integration (ARFIMA)" on page 36).
- Pooled mean group estimation of panel data ARDL models ("Panel ARDL and Pooled Mean Group (PMG) Estimation" on page 37).
- Threshold regression ("Threshold Regression" on page 37).
- New optimization engine and associated coefficient covariances ("Optimization Engine and Coefficient Covariances" on page 38).

Testing and Diagnostics

- Unit root tests with a structural break ("Unit Root Tests with a Breakpoint" on page 39).
- Cross-section Dependence Tests ("Panel Cross-section Dependence Tests" on page 41).
- Panel Effects Tests ("Panel Random Effects Tests" on page 42).

Other Features

- New functions for generating series ("Series Generating Functions" on page 44).
- Added matrix language tools ("Matrix Language Tools" on page 45).
- Enhanced table support ("Table Tools," on page 46).

- New general information tools ("General Information Tools," on page 46).
- New object data members ("Object Data Members," on page 47).
- List of new or updated global commands ("Updated Command List" on page 48).
- List of new or updated object commands ("Updated Object List" on page 49).

EViews 9 Compatibility Notes

- Compatibility notes for users of EViews 9 ("EViews 9 Compatibility Notes" on page 53).

General EViews Interface

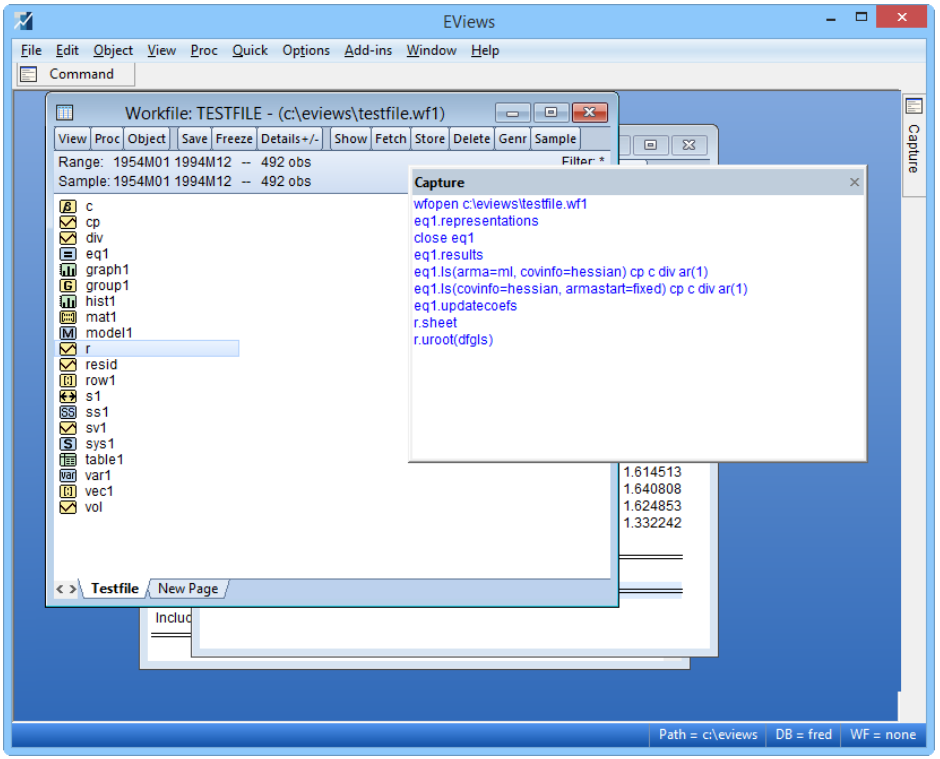
The general EViews interface has been improved in a number of important ways. The following are some of the highlights.

Command Capture

EViews offers command capture for most object views and procedures, and a large number of interactive operations. With command capture, when you perform an operation using the dialogs or user-interface, EViews will save the equivalent text command for display and export.

You can copy-and-paste the contents of the capture window, or you can save the contents to a file. Right-clicking in the window brings up a menu for copying or clearing the window, saving the contents to a file on disk, or opening a new, untitled program containing the contents of the window.

To display the command capture window or set focus on the window, click on **Window/ Display Command Capture Window** from the main EViews menu.



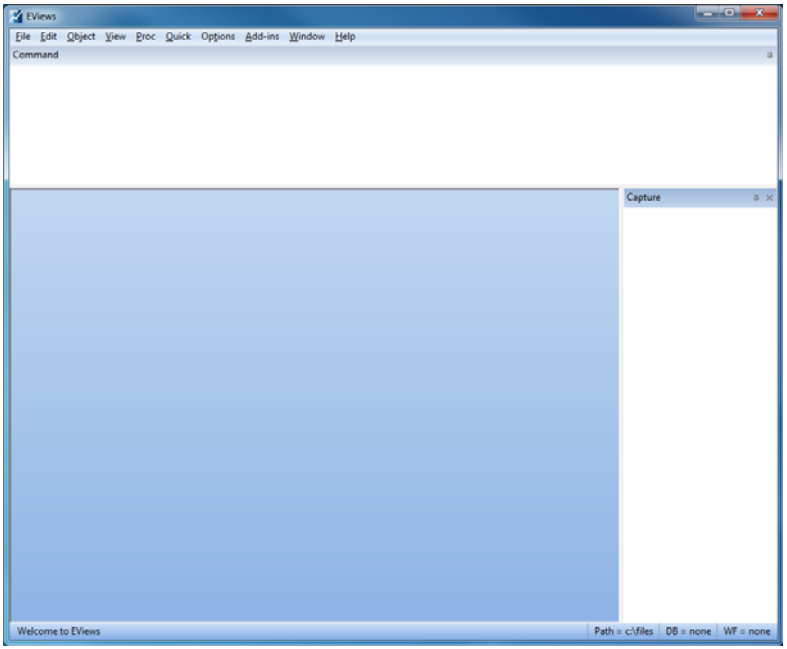
Note that not all interactive operations in EViews are capture enabled. Among the notable exceptions are some types of graph creation and customization, object view graph customization, and individual cell editing for tables and spreadsheets.

- For additional discussion, see "Command Capture" on page 3 of the *Command and Programming Reference*.

Window Docking

The EViews 9 command and capture windows are dockable, hideable, and floatable.

Dockable and hideable windows allow you to move frequently used windows out of the way while keeping them close at hand. They offer space saving convenience which is particularly valued when working with smaller screen devices like laptops.



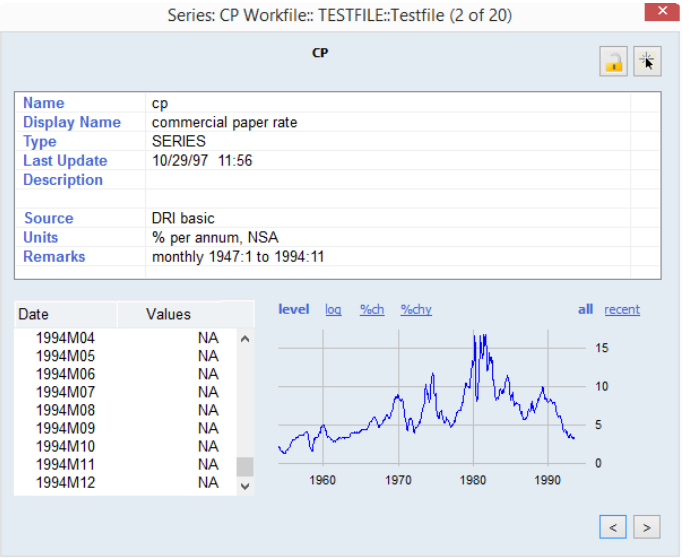
Floatable windows allow you to move them out of the way of your work. You may even go so far as to float a window outside of the EViews frame.

- For discussion, see "Command and Capture Window Docking" on page 6 of the *Command and Programming Reference*.

Database and Workfile Object Preview

In earlier versions of EViews, browsing through the contents of a database or workfile could be tedious as it required opening and closing each object that you wished to examine.

EViews 9 offers you the ability to preview objects contained in a database or a workfile. With the preview tool, you may quickly browse through a number of objects. You may use the preview to quickly scroll through a preview of each object, viewing metadata (name, type, description, frequency, last update, source, units, *etc.*) and object type-specific information (for example, series will show observation data and a small graph while equations will show estimation output).



- For additional detail, see "Previewing Objects" on page 103 of *User's Guide I*.

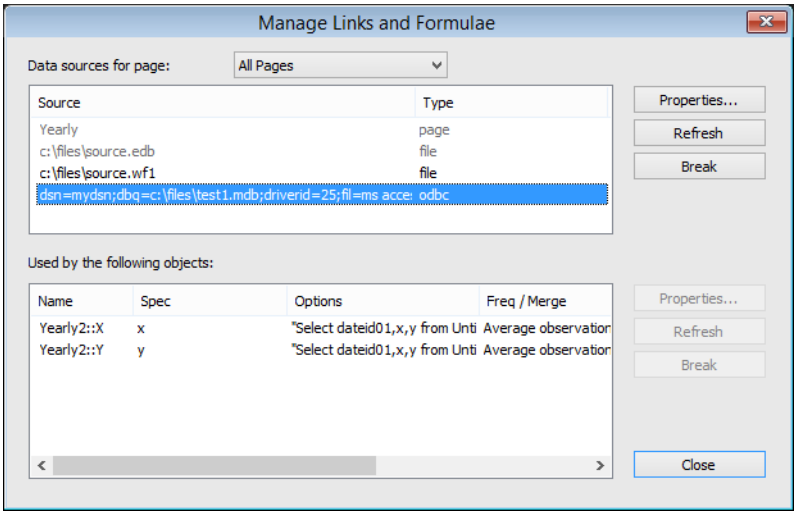
Data Handling

EViews 9 offers a variety of new features for working with data.

Enhanced import and linking of data

In EViews 9, series objects can be linked to an object in another workfile and to any external data source that can be imported into EViews (*e.g.* – Excel file, Text file, ODBC database, etc). These linked series may be unlinked and re-linked as desired and the data refreshed when the workfile is opened, or on request.

The **Manage Links and Formulae** dialog has been redesigned to help you manage these new data links.



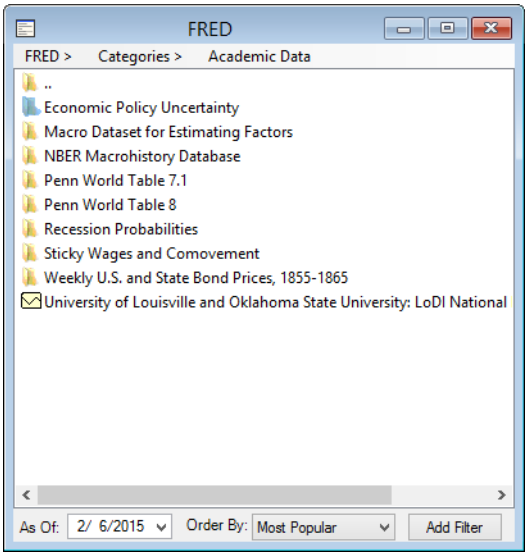
You can use the dialog to examine and edit the link properties, refresh the data, and break or restore the links.

- For discussion, see "Breaking links" on page 248 of *User's Guide I*.

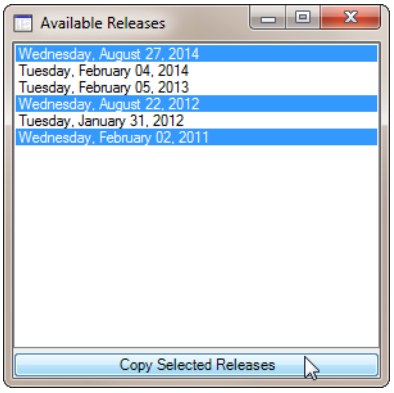
New FRED Database Interface

EViews 9 offers an updated interface to the FRED data service provided by the Federal Reserve Bank of St Louis. The new interface includes a custom browser for navigating the available FRED data and adds support for retrieval of historical releases.

To use the new interface, select **File/Open Database…** from the main EViews menus and open the all new custom FRED database. The browser interface allows you to find data available within FRED by navigating through a set of nested folders. Click on the folder icons to drill down into subtopics:



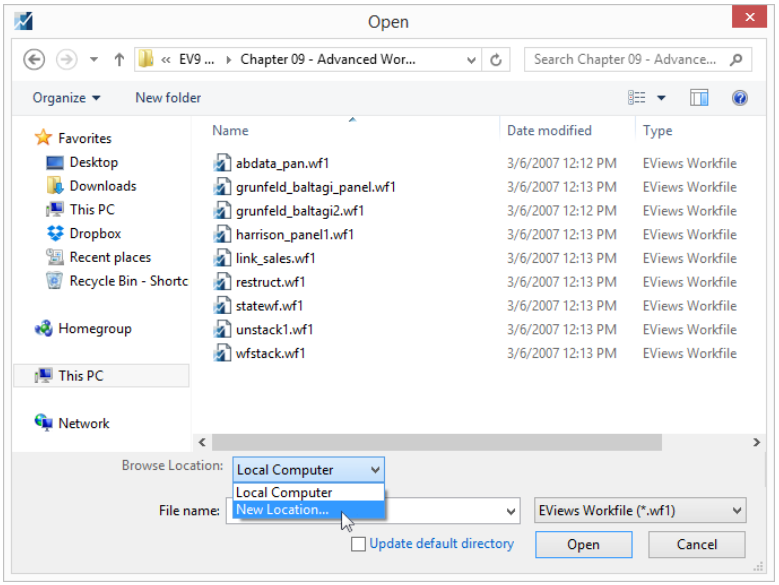
In addition, the FRED interface offers a number of useful tools for working with your FRED database, including keyword search, popularity and update ordering, filtering, vintage handling, and more.



- See the discussion in "FRED" on page 352 of *User's Guide I*.
- See also dbopen (p. 344) in the *Command and Programming Reference*.

Cloud Drive Support

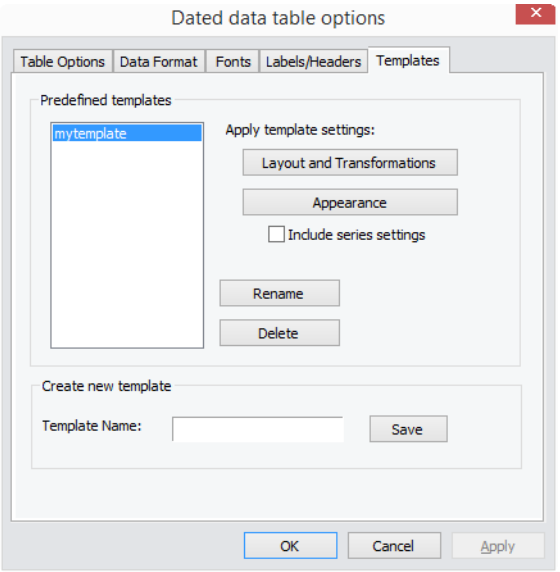
You may now access your Box, Dropbox, Google Drive, or OneDrive drive from within EViews. The **File Open…** and **File/Save As…** dialogs allow you to configure access to your accounts, and to read and write files directly from your cloud drives.



- See the discussion of "Cloud Drive Support" on page 92 of *User's Guide I*.
- See also `wfopen` (p. 513), `wfsave` (p. 527), `pageload` (p. 438), and `pagesave` (p. 440) in the *Command and Programming Reference*.

Dated Data Table Templates

EViews 9 now allows you to store and load all of your dated data table settings to and from a dated data template.



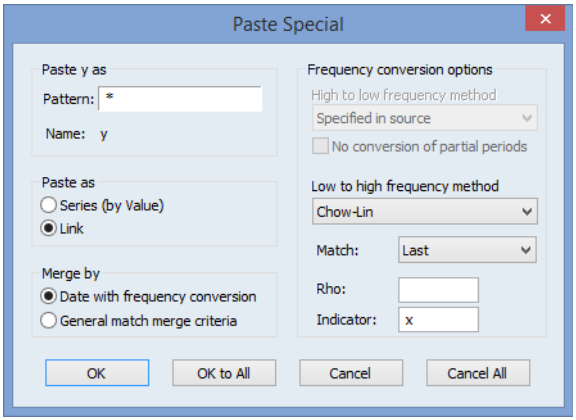
For documentation, see:

- See the discussion of "Dated Data Table Templates" on page 520 of *User's Guide I*.
- See also `Group::ddloadtmpl` (p. 302), and `Group::ddsavetmpl` (p. 305) in the *Object Reference*.

Expanded Frequency Conversion Interpolation Methods

EViews 9 supports new low-to-high frequency conversion methods as well as modification to the existing methods.

The new conversion methods are Point, Denton, Chow-Lin and Litterman. Each of these methods supports a number of different match points (*i.e.* how the periods on the source page are connected to those in the destination page), including First, Last, Sum, and Average. The existing Linear and Cubic methods have been extended to allow matching on First as well as Last.



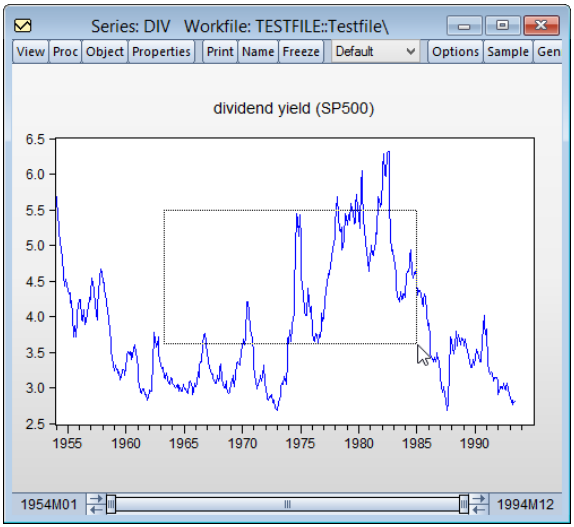
- For additional detail, see "Frequency Conversion" on page 158 of *User's Guide I*.
- See also copy (p. 327) in the *Command and Programming Reference*.

Graphs, Tables, and Spools

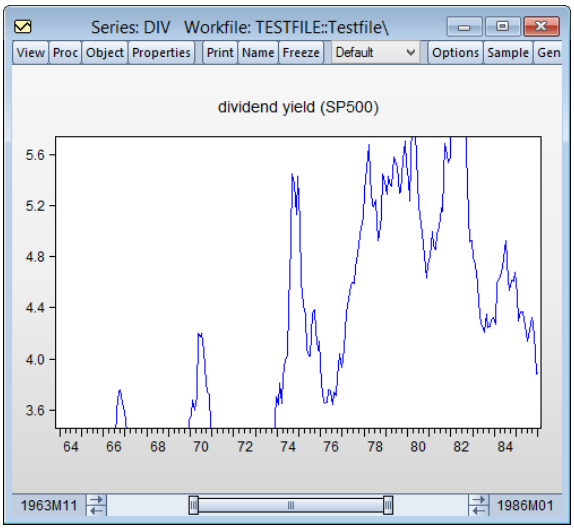
Graph Pan and Zoom

Panning and zooming is available on graphs and graph views that feature the observation slider bar (*i.e.*, those graph views that allow for subsample display). You may use these features to focus on particular regions of the graph, much like cropping a photograph.

To zoom, left-click on the graph and drag the cursor to draw a box around the area into which you would like to zoom.

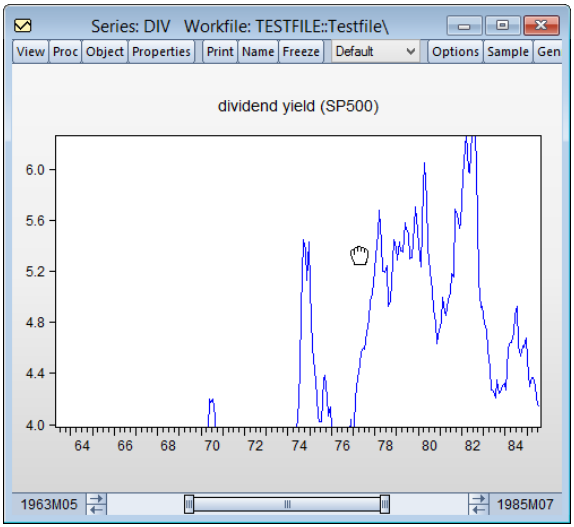


then release the mouse. The display changes to show only the area within the box and the observation slider bar and axis labels will change to reflect the modified display.



Note that there will be no indication that observations from the original graph have been trimmed away.

To pan, right-click on the graph, and when the cursor change to a hand, drag the image and release when the display shows the portion of the graph that is of interest.



Note that zooming and panning does not change the graph, only the display of the portion of the graph in the window. The observation slider bar and axis labels will change to reflect the modified display. Freezing the graph will take a snapshot of the current display.

To restore the original graph display, press ESC.

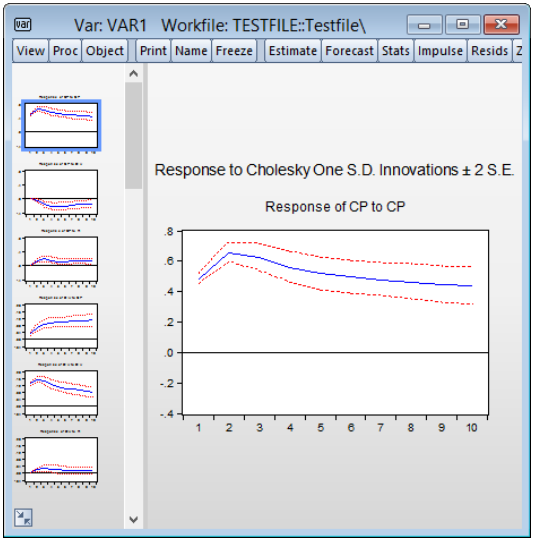
- For related discussion, see "The Graph Sample" on page 595 of *User's Guide I*.

Multi-graph Slideshow

EViews 9 makes viewing multi-graphs easier via the introduction of a graph slideshow.

When working with multiple graphs in a single graph frame one sometimes finds that the individual graphs are too small to see any detail. Consider, for example, the graph of impulse responses for a three variable VAR:

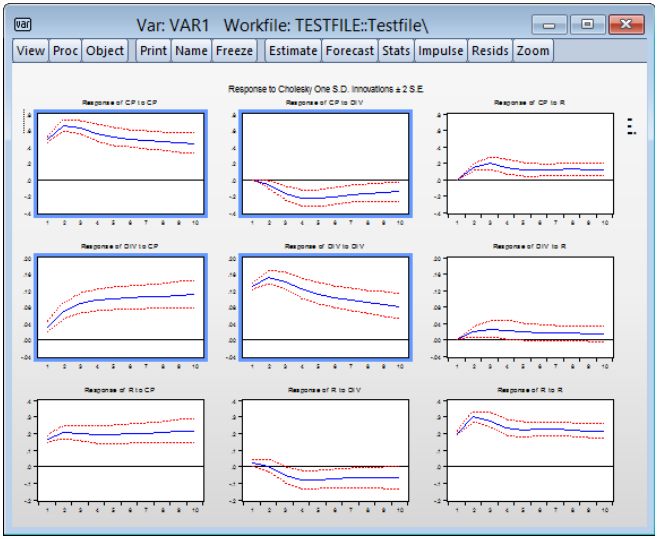
EViews 9 allows you to zoom in on the individual graphs and to display the contents of the graph in a slideshow format. Click on the **Zoom** button on the toolbar to enable the slide-show:



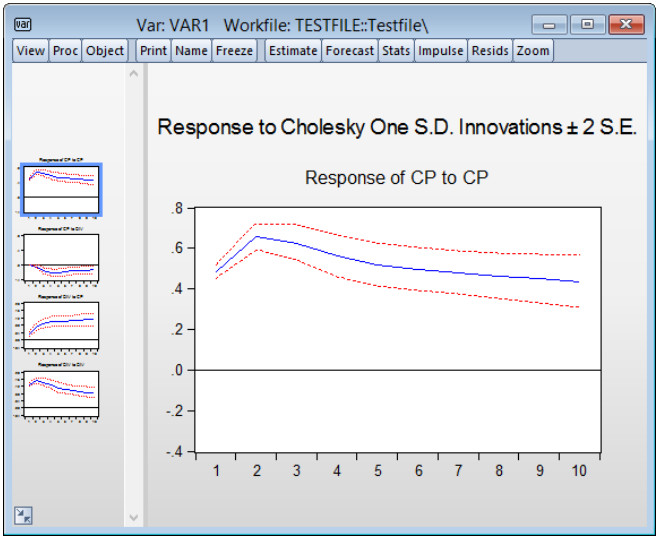
Here we see the zoom view. On the left is a gallery of the individual graphs; on the right is a larger display of the selected graph. You can page through the individual graphs using the arrow keys or **Page Up/Page Down** to select the next graph, or the **Home** and **End** keys to move to the first or last graph. Alternately, you can click on a gallery item to jump to that graph.

Click on ESC to exit zoom mode.

If you wish to enable the slideshow for a subset of the graphs, return to the original graph and select the graphs of interest by clicking or drag clicking to select the desired items,



then press the **Zoom** button or right-mouse click and select **View/Selected graphs**. EViews will show the gallery for just the selected items:



- See the related discussion in "Graphing Multiple Series (Groups)" on page 584 of *User's Guide I*.

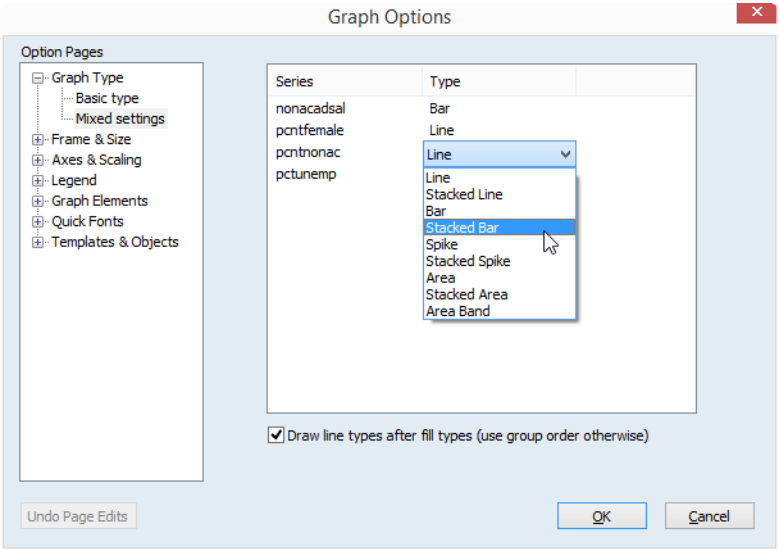
Improved Mixed Graph Type

EViews 9 offers an entirely new interface where you can flexibly specify the type of each graph in the mixed display.

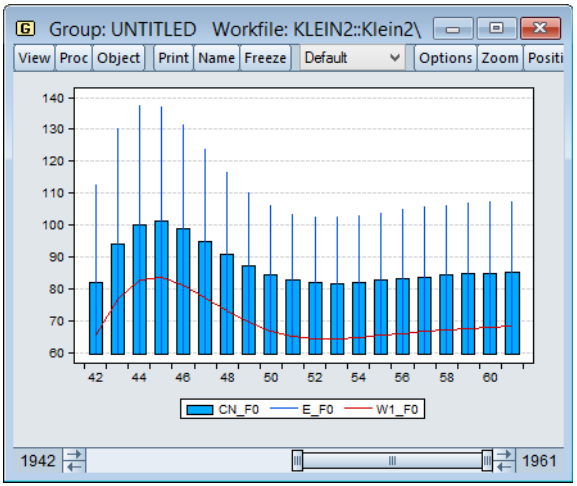
Previous versions of EViews allowed you to display a mixed graph type where the first series or column of data was depicted using a bar, spike, or area plot, and the remaining data was plotted using line graphs. There was no way to mix more than two graph types, nor was there a way to draw with more than one of the first graph type.

The new EViews interface allows you to specify the type of each graph element. Set the first series to spike, the second to line, and the third to area. Or mix up the assignment. The choice is up to you.

When you select **Mixed** as your **Basic Type**, the left-hand side tree adds an additional page under **Graph Type** for **Mixed settings**. When you click on this node, the right-hand side of the dialog changes to display the settings for each type:



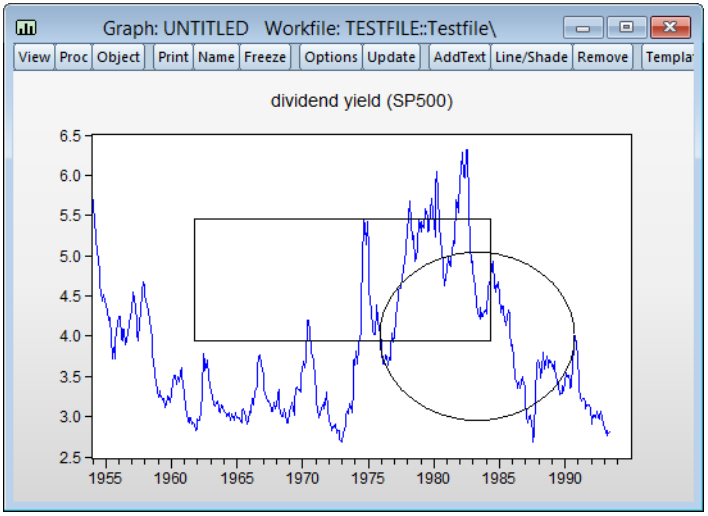
You may, for example, graph your group data with a spike for the first series, a line for the second, and an bar for the remaining two.



- See the discussion in "Mixed" on page 627 of *User's Guide I* for discussion.
- See also `mixed` (p. 909) in the *Object Reference*.

Rectangle and Ellipse Drawing

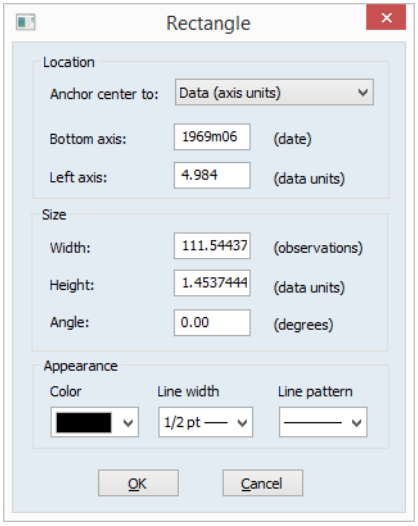
You may now draw rectangles and ellipses in frozen graph objects.



- For discussion, see "Drawing Rectangles and Ellipses" on page 713 of *User's Guide I* for discussion.
- See also, `addellipse` (p. 232) and `addrect` (p. 234) in the *Object Reference*.

Data-based Anchoring

By default, the positions of arrow and text objects in a graph are specified in virtual inches relative the top left corner of the graph. While useful for some types of drawing, this approach is problematic when one wishes to place objects at particular data points or dates in the graph as in, for example, identifying an outlier or the observation value at a notable date. For one, placing the object is quite difficult programmatically as there is no clear way of translating from data values or observations to virtual inch offset. Moreover, if one changes the axes ranges, sample, or aspect ratio of the graph, the absolute positioning method breaks down.



You can attach arrows and the new rectangle and ellipse drawing objects to fixed data/date points within the graph. You can, for example, choose to place your object at the point defined by the observation for 1990m01 and the maximum value of X.

Similarly, sizes of objects may also be expressed in terms of observations and data units, so that you can draw a rectangle that is "2 years wide" and "10.5" data units tall.

In addition to being easier to specify programmatically, if, you then alter the graph frame or axes, the object will move with the data in the graph.

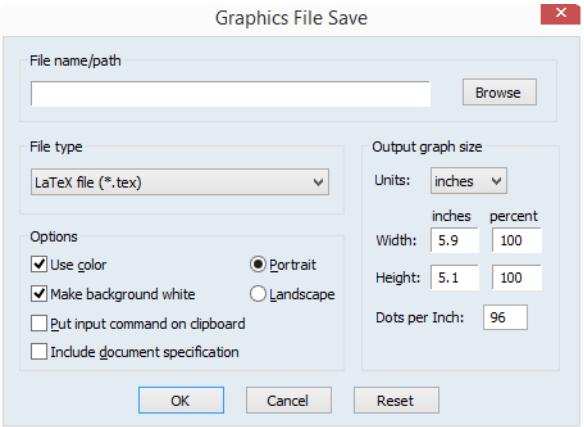
- See "Data-based Anchoring" on page 715 of *User's Guide I* for discussion.
- See also `addarrow` (p. 229), `addellipse` (p. 232), `addrect` (p. 234) in the *Object Reference*.

LaTeX Output

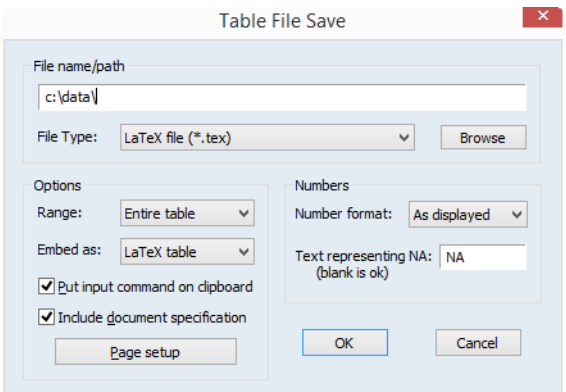
You can now save your table, graph, and spool output in LaTeX format.

This feature is available whenever you save a table, graph, or spool to disk (using commands, the table or graph save to disk proc, or the right-mouse button save from a table or graph view). In all of these case, you should select change the File type combo to "LaTeX file" to see the available options.

The options to save as PDF are included in the standard save dialogs for graphs, tables, and spools. Right-click on the graph, table, or spool object and select **Save graph to disk..., Save table to disk...**, or **Save to Disk**, respectively. The standard file save dialogs will appear. Select PDF from the **File Type** drop-down.



LaTeX also appears as a supported output type for table objects in EViews 9:



For command line documentation

- see `Graph::save` (p. 262) in the *Object Reference*
- see `Table::save` (p. 766) in the *Object Reference*

- see Spool::save (p. 664) in the *Object Reference*

Econometrics and Statistics

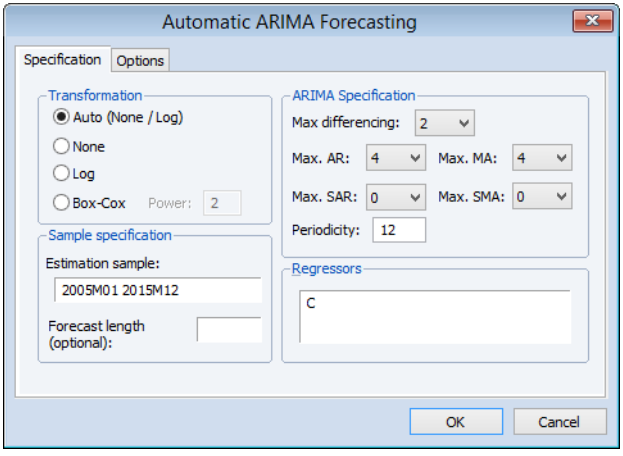
EViews 9 offers a exciting new additions and improvements to its set of econometric and statistical features. The following is a brief outline of the most important new features, followed by additional discussion and pointers to full documentation.

Automatic ARIMA Forecasting

Automatic ARIMA forecasting is a method of forecasting values for a single series based upon an ARIMA model.

Although EViews provides sophisticated tools for estimating and working with ARIMA models using the familiar equation object, there is considerable value in a quick-and-easy tool for performing this type of forecasting. EViews 9 introduces an automatic ARIMA forecasting series procedure that allows the user to quickly determine an appropriate ARIMAX specification and use it to forecast the series into the future.

You will find this feature using the **Proc** menu for a series object.



- For further documentation, see "Automatic ARIMA Forecasting" on page 449 of *User's Guide II* for discussion.
- See also Series::autoarma (p. 531) in the *Object Reference*.

Forecast Evaluation

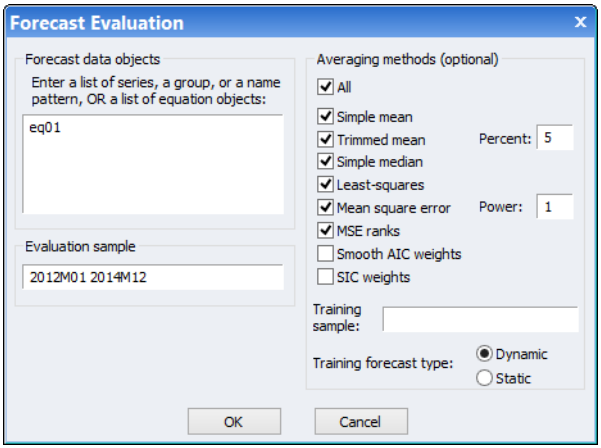
When constructing a forecast of future values of a variable, economic decision makers often have access to different forecasts; perhaps from different models they have created themselves or from forecasts obtained from external sources. When faced with competing fore-

casts of a single variable, it can be difficult to decide which single or composite forecast is "best". Fortunately, EViews 9 provides tools for evaluating the quality of a forecast which can help you determine which single forecast to use, or whether constructing a composite forecast by averaging would be more appropriate.

Given actual data and one or more sets of forecasts for an evaluation sample, EViews computes four different measures of forecast accuracy; RMSE (Root Mean Squared Error), MAE (Mean Absolute Error), MAPE (Mean Absolute Percentage Error), and the Theil Inequality Coefficient.

In addition, EViews can compute the Combination Test, or Forecast Encompassing Test (Chong and Hendry, 1986; Timmermann, 2006) for evaluating whether averages of forecasts perform better than the individual forecasts.

To perform forecast evaluation in EViews, you must have a series containing the observed values of the variable for which you wish to evaluate forecasts. To begin, open up the series and click on **View/Forecast Evaluation...**, which will open the **Forecast Evaluation** dialog box:



- For documentation see "Forecast Evaluation" on page 397 of *User's Guide I* for additional discussion.
- See also `Series::forceval` (p. 553) in the *Object Reference*.

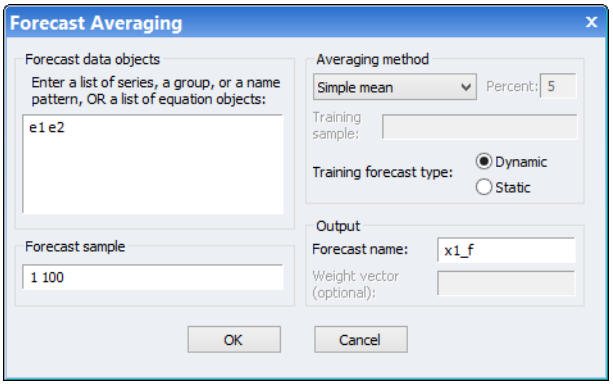
Forecast Averaging

Economic forecasters often have a variety of different models and forecasts of the same variable from which to choose. Traditionally the forecasting decision was to pick which single forecast was "best" out of the individual forecasts available. However, a number of studies (Timmermann 2006) have shown that averaging forecasts is more accurate than choosing a single best forecast.

Forecast averaging, or forecast combining, is a methodology for combining multiple forecasts into a single forecast. EViews 9 offers a number of easy-to-use tools for performing forecast averaging using simple mean, least squares, mean square error, mean square error ranks, smoothed AIC, approximate Bayesian model averaging. trimmed mean and simple median methods.

To perform forecast averaging in EViews, you must start with a series representing the data to be forecasted. Some of the forecast weighting techniques require actual data to calculate the weights, and in these cases this series should contain actual values for the variable being forecasted for at least some of the observations for which forecast values are available.

Open the series and click on **Proc/Forecast Averaging...**, which will open the **Forecast Averaging** dialog box:



The **Forecast data objects** box specifies the forecasts to be used for averaging. Forecasts can be entered either as a collection of series (in which case the names of the series, a series naming pattern, or the name of a group are entered), or as a list of equation objects. If equation objects are entered, EViews will automatically perform a dynamic forecast over the forecast period from each of those equation objects to generate the forecast data.

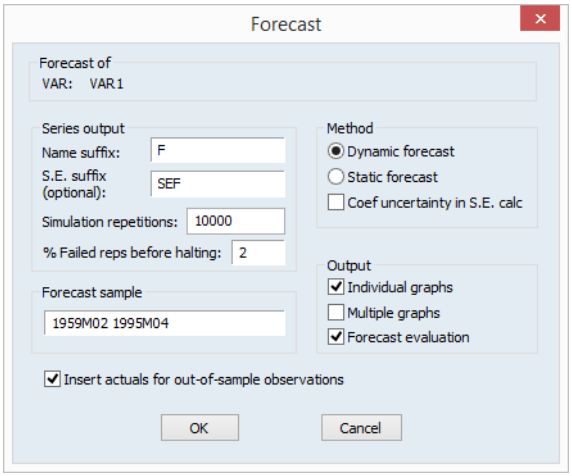
For documentation see:

- See "Forecast Averaging" on page 458 of *User's Guide I* for additional discussion.
- `Series::forcavg` (p. 551) in the *Object Reference*.

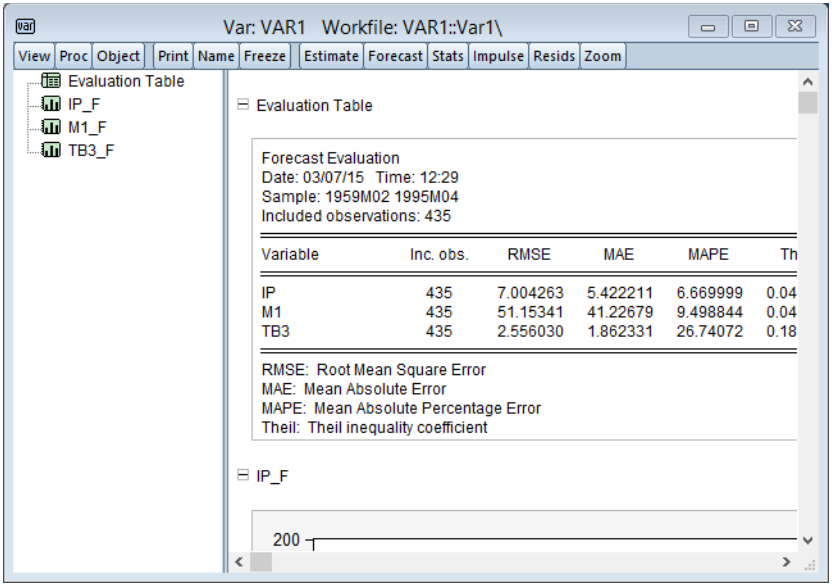
VAR Forecasting

Previously, to forecast from an estimated VAR object, you needed to first make an EViews model object from the VAR and then solve the model. This procedure was cumbersome, especially for those unaccustomed to working with models and scenarios.

In EViews 9, you may produce forecasts directly from an estimated VAR object. Click on the **Forecast** button or select **Proc/Forecast** to display the forecast dialog:



Fill out the dialog as desired and click on **OK**. EViews performs the forecast and, if appropriate displays output:



In this case, the output consists of a spool containing the forecast evaluation of all of the series in the VAR, along with individual graphs of the forecasts along with the corresponding actuals series.

- For additional information, see "Forecasting" on page 635 in *User's Guide II*.

- See also `Var::fit` (p. 829) in the *Object Reference*.
- See also `Var::forecast` (p. 830) in the *Object Reference*.

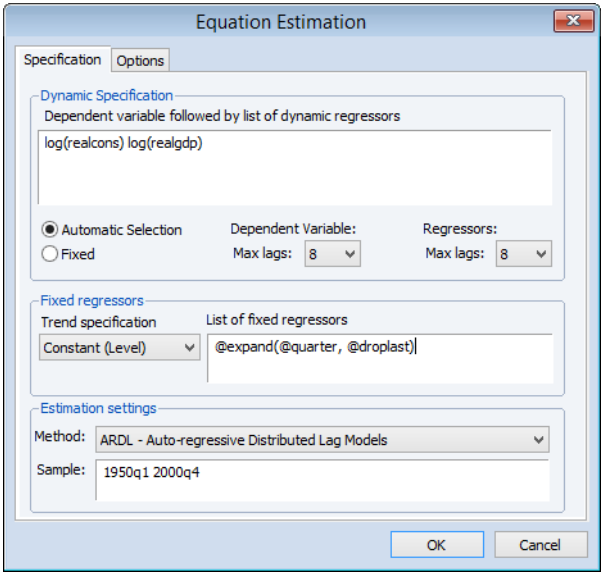
Autoregressive Distributed Lag (ARDL) Models

EViews 9 offers new tools for estimating and examining the properties of Autoregressive Distributed Lag (ARDL) models. ARDLs are standard least squares regressions which include lags of both the dependent variable and independent variables as regressors.

Although ARDL models have been used in econometrics for decades, they have gained popularity in recent years as a method of examining long-run and cointegrating relationships between variables (Pesaran and Shin, 1999; Pesaran, Shin and Smith, 2001).

EViews offers specialized tools for estimating ARDL models, including built-in lag-length selection methods, cointegrating relationship estimation, and Bounds testing for long-run relationship.

To estimate an ARDL model using the ARDL estimator, open the equation dialog by selecting **Quick/Estimate Equation…**, or by selecting **Object/New Object…/Equation** and then selecting **ARDL** from the **Method** dropdown menu. EViews will then display the ARDL estimation dialog:



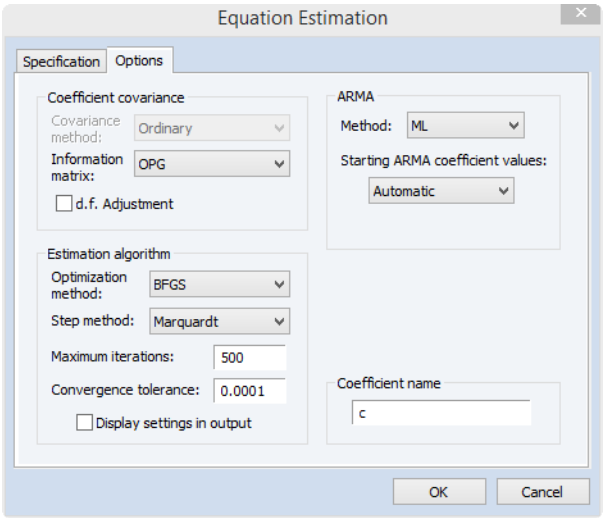
- See "Autoregressive Distributed Lag (ARDL) Models" on page 283 of *User's Guide II* for discussion.
- See also `Equation::ardl` (p. 45) in the *Object Reference*.

- See also `Equation::icgraph` (p. 107) in the *Object Reference*.
- See also `Equation::ictable` (p. 108) in the *Object Reference*.
- See also `Equation::cointrep` (p. 76) in the *Object Reference*.
- See also `Equation::cointgraph` (p. 67) in the *Object Reference*.
- See also `Equation::boundstest` (p. 51) in the *Object Reference*.
- See also `Equation::makecoint` (p. 121) in the *Object Reference*.

ML and GLS ARMA

EViews now allows you to estimate ARMA models specified by list using ML or GLS (in addition to the previously existing CLS-based estimator). Estimation of these models features the use of the Kalman filter to evaluation the exact likelihood (Hamilton 1994).

In the equation object dialog, click on the **Options** tab. The **ARMA** section in the upper right-hand corner of the dialog presents new options for estimating your ARMA model.



In addition to a choice between ML, GLS, or CLS estimation of ARMA methods, you will have a choice of methods for determining ARMA starting values, optimization method, and the approach to computing the estimate of the coefficient covariance.

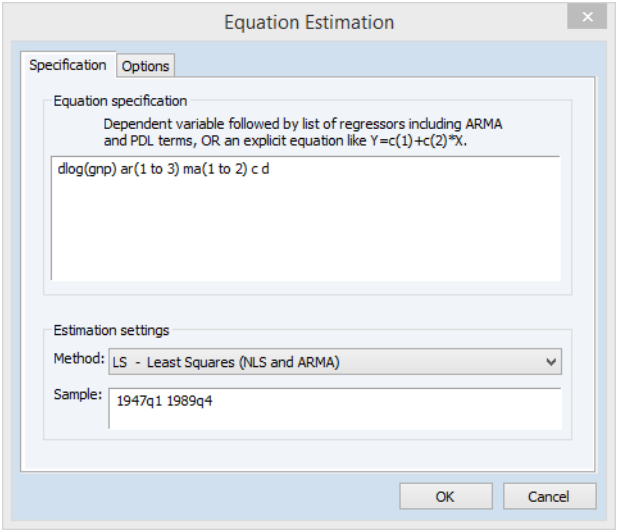
- For additional discussion, see Chapter 22. "Time Series Regression," on page 87 of *User's Guide II*.
- See also `Equation::ls` (p. 114) in the *Object Reference*.

Fractional Integration (ARFIMA)

Stationary processes are said to have *long memory* when autocorrelations are persistent, decaying more slowly than the rate associated with ARMA models. Modeling long term dependence is difficult for standard ARMA specifications as it requires non-parsimonious, large-order ARMA representations that are generally accompanied by undesirable short-run dynamics (Sowell, 1992).

One popular approach to modeling long memory processes is to employ the notion of *fractional integration* (Granger and Joyeux, 1980; Hosking, 1981). A fractionally integrated series is one with long-memory that is not $I(1)$. By combining fractional integration with an ARMA specification we obtain a fractional ARIMA (ARFIMA) model. The ARFIMA model includes a fractional integration parameter d that controls the degree of long-run dependence, allowing for the separate modeling of the short and the long-run dynamics

EViews supports exact maximum likelihood estimation of ARFIMA models via ML or GLS using efficient algorithms as described in Sowell (1992) and Doornik and Ooms (2003). Among the supported features are automatic intialization of the integration parameter d estimates using the Geweke and Porter-Hundlak (1983) log-periodogram regression, and concentration of the likelihood with respect to regression coefficients and scale.



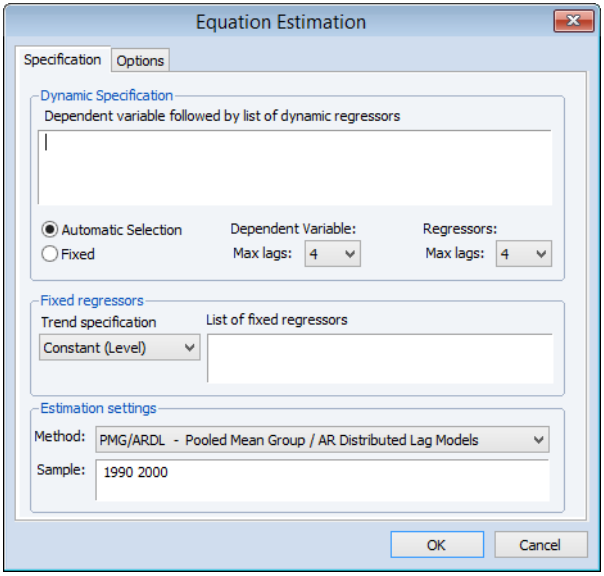
To specify an ARFIMA model you should specify your ARMA model by list, then include "D" as a regressor to instruct EViews to estimate an integration term.

- For additional discussion, see Chapter 22. "Time Series Regression," on page 87 of *User's Guide II*.
- See also `Equation::ls` (p. 114) in the *Object Reference*.

Panel ARDL and Pooled Mean Group (PMG) Estimation

EViews 9 supports estimation of the Pooled Mean Group (PMG) estimator of Pesaran, Shin and Smith (PSS, 1999) for ARDL models with individual effects. This model is particularly popular in panel settings where the number of periods is large, since alternative GMM estimators may not be appropriate in those settings.

The PMG takes the cointegration form of the simple ARDL model and adapts it for a panel setting by allowing the intercepts, short-run coefficients and cointegrating terms to differ across cross-sections.

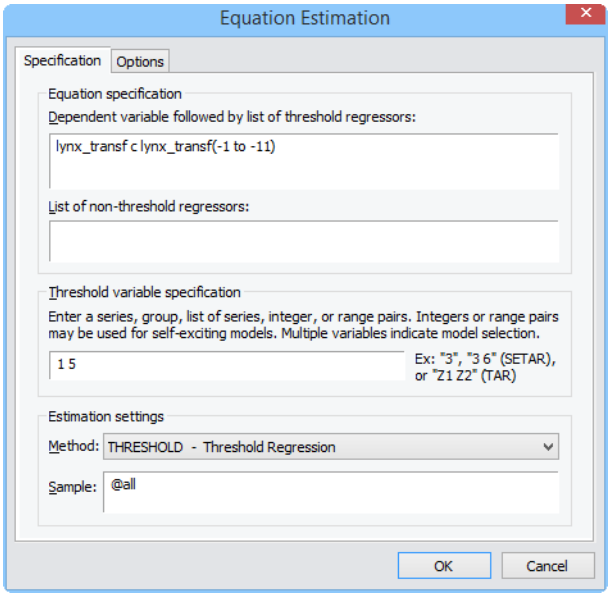


- See "Pooled Mean Group Estimation" on page 855 in *User's Guide II* for discussion.
- See also `Equation::ardl` (p. 45) in the *Object Reference*.

Threshold Regression

EViews 9 estimates threshold regression models (TR) which are linear regression models where the coefficients on explanatory variables may change as a threshold variable crosses boundary values. This class of model includes the popular threshold autogressive models (TAR).

To estimate a threshold equation, select **Threshold Regression** from the equation estimation method combo.

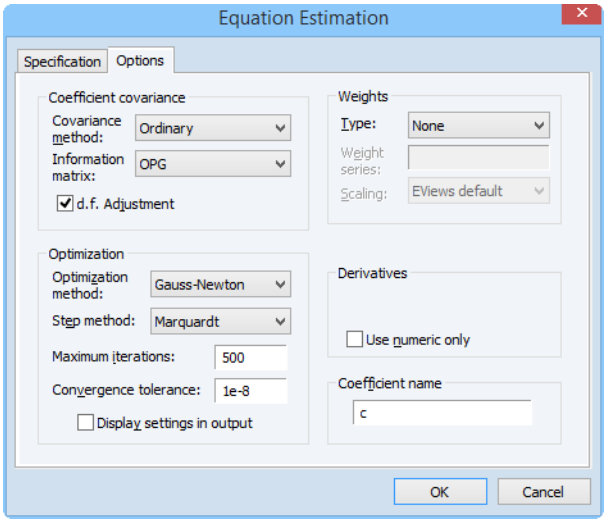


- See "Threshold Regression" on page 427 in *User's Guide II* for discussion.
- See also `Equation::threshold` (p. 161) in the *Object Reference*.

Optimization Engine and Coefficient Covariances

In EViews 9, we have integrated an all new estimation engine into many familiar EViews estimators.

The new engine, which implements a sophisticated trust region approach (More and Sorensen, 1983), supports versions of the Broyden-Fletcher-Goldfarb-Shanno (BFGS), Gauss-Newton/BHHH, Newton-Raphson, and Fisher Scoring algorithms.



One important benefit of the use of the new optimization engine is the availability of numeric second derivative estimates of the Hessian in cases where they were not previously available. Having second derivatives allows us additional choice in the estimators of the coefficient covariance, both through alternative estimators of the information matrix and through an expanded ability to compute Huber-White type sandwich estimators.

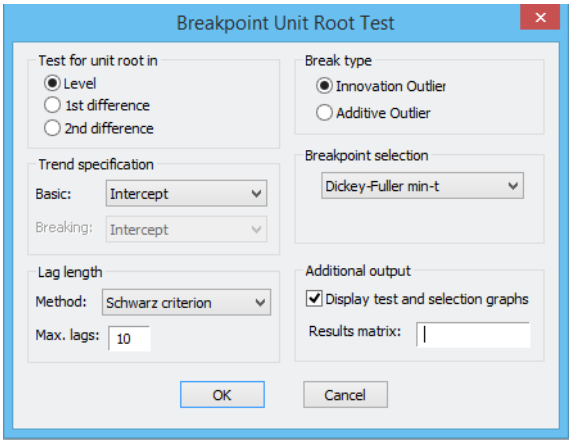
The following existing EViews estimators have been updated to support the new estimation engine: single equation nonlinear least squares and ARMA, binary, count, ordered, censored, ARCH (single equation and system), switching regression, GLM, Heckman selection, system FIML, state space, user-defined likelihood.

- See "Optimization Method" on page 1006 in the *User's Guide II* for discussion.
- See also the command entries for the various estimators, for example, `Equation::ls` (p. 114) in the *Object Reference*.

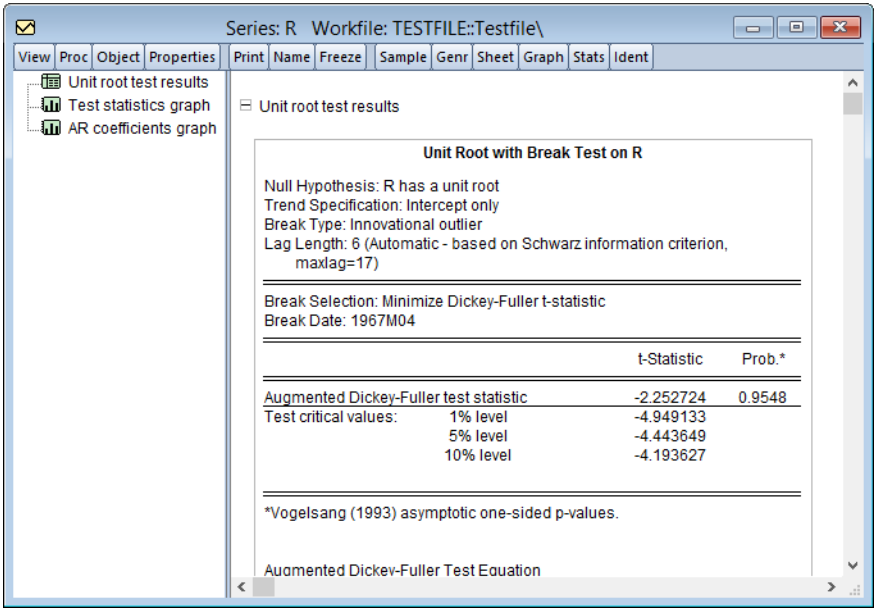
Unit Root Tests with a Breakpoint

EViews 9 supports the computation of modified Dickey-Fuller tests which allow for levels and trends that differ across a single break date. The testing framework follows the work of Perron (1989), Perron and Vogelsang (1992), Vogelsang and Perron (1998), Banerjee, *et al.* (1992).

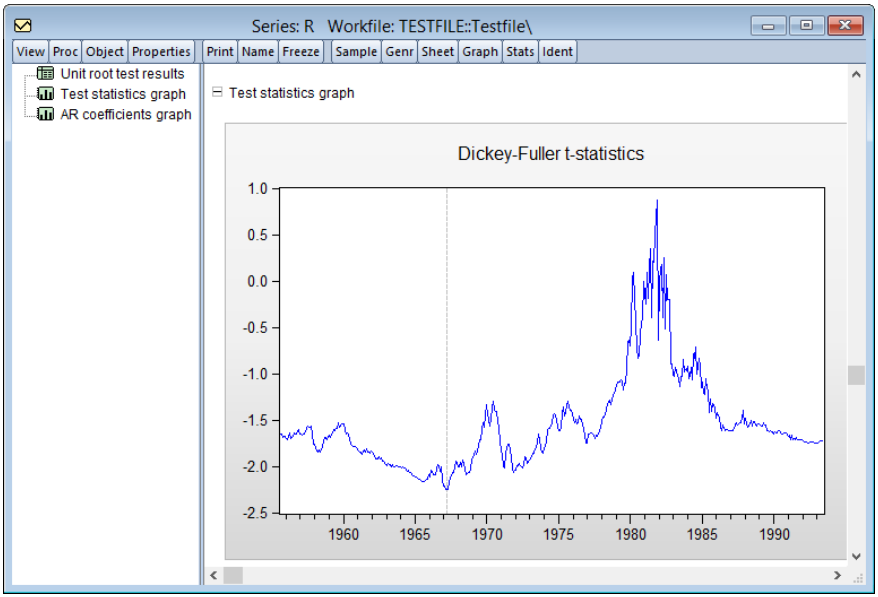
EViews offers unit root tests under a variety of scenarios for the type and timing of the break and different data trend specifications. To compute a unit root test with breakpoint select **View/Breakpoint Unit Root Test…** from the series menu.



Fill out the dialog as desired, and click on **OK**. EViews will display the test results, and will, by default, display a spool object that contains the test results table,



and graphs of the breakpoint selection results,

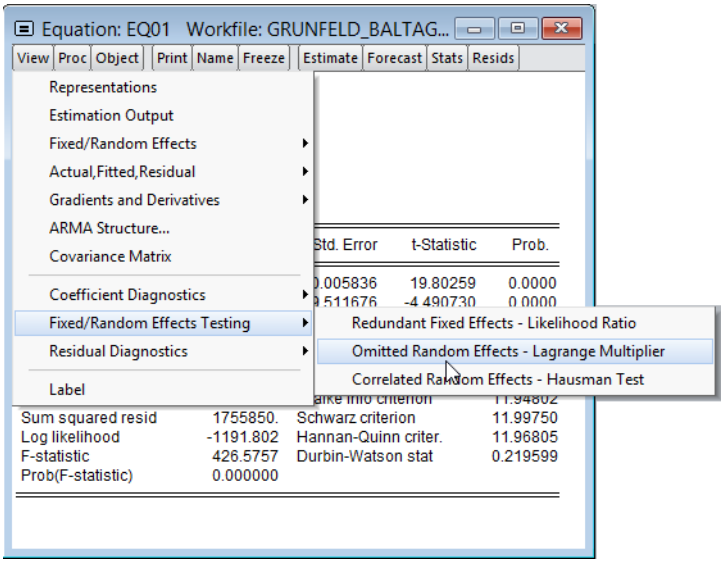


- For discussion, see "Unit Root Tests with a Breakpoint" on page 539 in the *User's Guide II*.
- See also `Series::buroot` (p. 537) in the *Object Reference*.

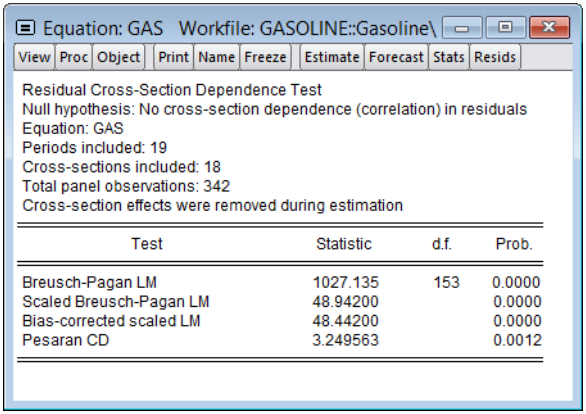
Panel Cross-section Dependence Tests

EViews 9 performs tests for cross-section dependence (CD) in panel data. You may perform the Breusch-Pagan LM (1980), Pesaran (2004) scaled LM and CD, and the Baltagi, Feng, and Kao (2012) bias-corrected scaled LM tests in panel equation and panel series settings.

To perform a panel series test, open a panel series and select **View/Cross-section Dependence Test**. To perform a test on the residuals from an estimated panel equation, select **View/Residual Diagnostics/Cross-Section Dependence Test**:



EViews will compute the relevant statistics, and display the results in tabular form:



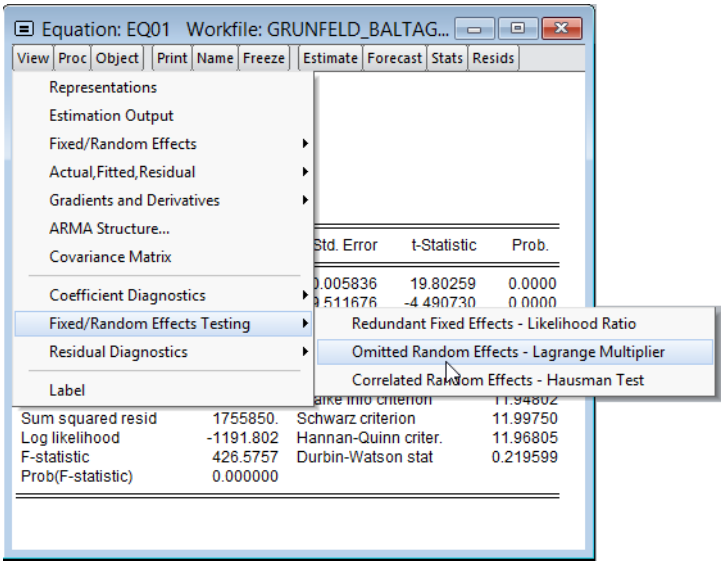
- For discussion, see "Panel Cross-section Dependence Test" on page 872 of *User's Guide II*.
- See also `Equation::cdtest` (p. 55) in the *Object Reference*.

Panel Random Effects Tests

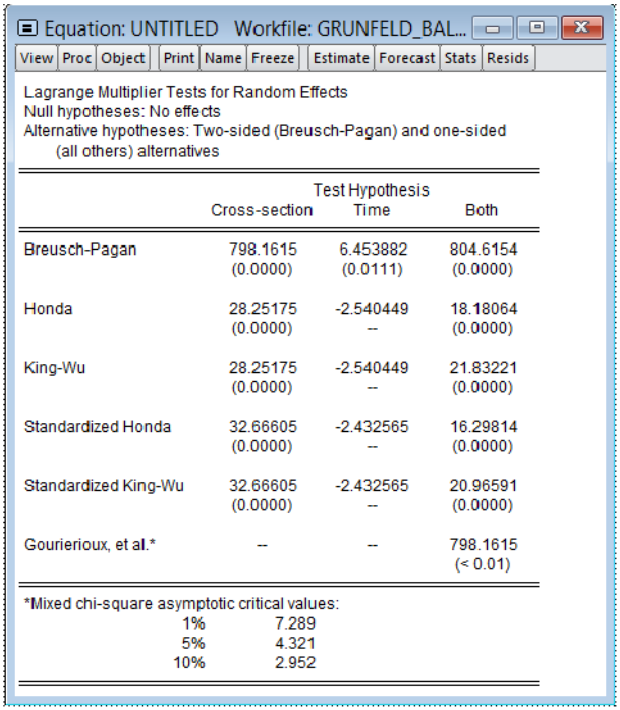
EViews 9 allows you to test for individual and time unobserved random effects in a panel or pool equation. EViews computes the Breush-Pagan LM (1980), Baltagi and Li (199), Honda

(1985), King and Wu (1997), Gourieroux, Holly, and Monfort (1982), Moulton and Randolph Standardized LM (1989) tests.

To compute the test statistics, select **View/Fixed-Random Effects Testing/Omitted Random Effects - Lagrange Multiplier** from an estimated panel equation:



The results for all of the tests are displayed in the object window:



- For discussion, see "LM Tests for Random Effects" on page 865 of *User's Guide II*.
- See also `Equation::rcomptest` (p. 145) in the *Object Reference*.

Other Features

There are a number of other features and improvements that are not mentioned above.

Series Generating Functions

These functions return cumulative values for each observation:

Function	Description
`@cummedian(`*arg1[, s]*`)`	Cumulative median of *arg1*.
`@cummedianb(`*arg1[, s]*`)`	Backward cumulative median of *arg1*.
`@cumquantile(`*arg1, arg2[,s])*	Cumulative *arg2* quantile of *arg1*.
`@cumquantileb(`*arg1, arg2[,s])*	Backward cumulative *arg2* quantile of *arg1*.