EViews® 8

Estimation · Forecasting · Statistical Analysis
Graphics · Data Management · Simulation

Getting Started

IHS

EViews 8 Getting Started

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IHS Global Inc.
4521 Campus Drive, #336
Irvine CA, 92612-2621
Telephone: (949) 856-3368
Fax: (949) 856-2044
e-mail: sales@eviews.com
web: www.eviews.com

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Getting Started

Congratulations on your purchase of EViews 8, the premier forecasting and analysis package for Windows-based computers. This guide will lead you step-by-step through the installation and registration procedure for EViews 8.

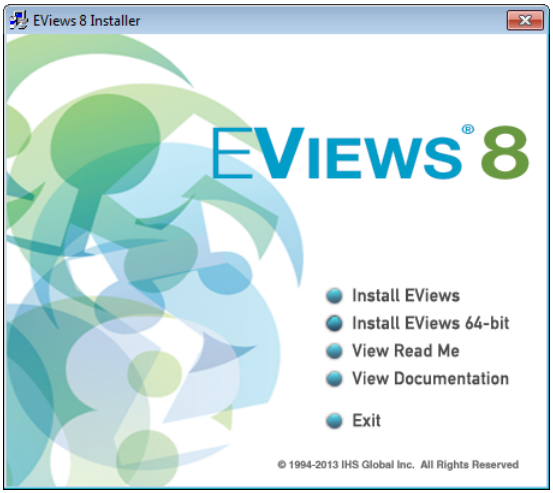
(The following discussion describes the installation and registration process for single user copies of EViews and seat licenses purchased under a Volume License Program. Setting up machines to use concurrent use licenses will require a different procedure; for details, please check with your IT support department.)

Installing EViews

You should install EViews 8 by running the installation program contained on the CD-ROM or downloaded to your computer's hard drive.

If you are installing from the file downloaded to your computer, simple click on the "EViews8Installer.exe" or "EViews8Installer(64-bit).exe" executable program file.

If installing from the EViews CD, using the "Autorun.exe" program, the EViews 8 CD installation screen is displayed, offering several options for how to proceed. You may close this window at any time by clicking on the **Exit** button, by clicking on the **Close Window** box in the upper right-hand corner of the window, or by double clicking on the icon to the left of "EViews 8" in the title bar.



You should first click on **View Read Me** to view any last minute changes in the installation or operating instructions.

To start the installation process, click on **Install EViews** and follow the instructions.

- First, you will be prompted to read and accept the License Agreement, and to designate a directory into which you wish to install your copy of EViews. If you wish to change

the default installation directory, click on **Browse** and navigate to the desired directory. Click on **Next** to continue.

- Next, you will be asked to enter a name and serial number. Single user license holders should will have been provided with a 24-character serial number, either on the back of the CD-ROM case, or in separate communication. Those of you who have obtained your copy of EViews as part of a Volume License agreement should obtain a serial number from your license administrator. Enter the serial number and your name as you wish it to appear in your copy of EViews, and click on **Next**.
- Select the components you wish to install and click on **Next**.
- Lastly, you will be asked about setting up a Start Menu folder containing shortcuts to the EViews example files folder and the EViews program executable. Clicking on **Next** starts the actual installation of files onto your computer.

You should note that as part of the installation procedure, EViews will prompt you to register files with the extensions .WF1, .PRG, .EDB, .AIPZ, and .UIPZ. If these extensions are already registered, possibly by an earlier version of EViews, you will be prompted to allow EViews 8 to override the existing registration. Registering the extensions is not required, will allow you to double-click on files with these extensions to launch EViews 8.

Once the installation procedure is completed, click on **Finish**. If you have elected to create it, the EViews Start Menu folder will open. To launch EViews, double-click on the EViews 8 icon. Subsequently, you may launch EViews using the shortcut on your desktop or by selecting EViews from the Start Menu shortcuts, if present, by double-clicking on EViews registered file types, or by navigating to the EViews installation directory and double-clicking on the EViews icon.

Registering EViews

What is Registration?

To use EViews 8 on a specific computer, you must first register the program using the serial number obtained with your purchase or obtained from your license administrator. EViews registration is the one-time process of assigning a serial number to a specific machine, sending a unique machine ID number to IHS Global Inc., and writing some information to your Windows registry or Mac application support directory. This is a simple process that can be performed in a few seconds.

The first time EViews is run on a new machine, you will be prompted to register your copy for that machine. On a Windows machine, you may choose to do so immediately, or you can put off registration to a later date, but you must register the copy within 30 days of installation. If you delay registration, you will be prompted to register the copy every time you launch EViews. After 30 days, an unregistered copy of EViews will no longer run.

The EViews single user and standalone licenses allow for a single individual to have exclusive use of copies of EViews residing on multiple machines, or for multiple users to have exclusive access to a copy of EViews residing on a single machine. For example, a single user may install and register EViews on his or her office computer, home computer and a laptop computer, provided that the use of EViews is exclusive. Note, specifically, that the license terms do not allow two users to share copies of the same license of EViews residing on two machines.

To facilitate the legitimate use of EViews on multiple machines, we allow each EViews single user serial number (one beginning with "80A") or standalone serial number (one beginning with "80S") to be used in registering up to three machines. If you have exceptional circumstances which require registration on additional machines, please contact our office.

Under the terms of the EViews Volume License agreement, "80C" (volume) license serial numbers may not be used to register multiple machines. Each volume licensed machine running EViews must be assigned a distinct serial number. Thus, licensing an office computer, home computer and laptop computer of a single user will require three distinct Volume License serial numbers.

Once registered on a given machine, EViews will run indefinitely. The copy of EViews may be uninstalled and reinstalled on a registered machine, updated, or moved to a different directory without reregistering the copy for that machine. In the special case where a machine's hard disk is wiped clean, but no other changes are made to the system, you may simply reregister your copy of EViews. Note that in this circumstance, reregistration on the machine will *not* count as an additional registration.

If an entire machine or a machine's hard disk is replaced, you should contact our office to unregister your previous installation prior to reregistering.

How Do I Register?

Before starting the registration process, you should first locate your EViews serial number. You most likely will need to enter this number into EViews during the registration procedure.

Next, you should launch EViews as described above.

If the copy of EViews is not registered, EViews will display a warning dialog. The dialog will inform you that EViews is not registered for this machine and, *if applicable,* will indicate the number of additional days the unregistered copy will continue to run.

You may choose to register in one of two ways: you may use the EViews auto registration features (by clicking on **Auto Registration...**), or you can manually register (by clicking on **Manual Registration...**). Selecting either of the these two options will open a dialog prompting you for additional information.

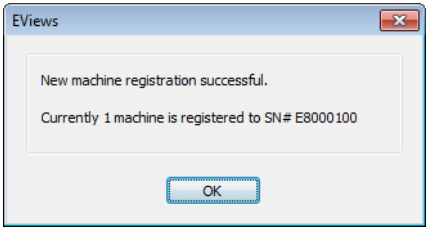
(You can choose to delay software registration by clicking on the **I will register later** button. If you select this option and the grace period has not expired, EViews will close the dialog and will operate in the usual fashion. In this way you can use your unregistered copy of EViews as though it were fully registered. If, however, the grace period has expired, your copy of EViews will not run until registered.)

Auto Registration

If your computer is connected to the Internet, auto registration makes registering EViews a snap. Simply click on the **Auto Registration...** button to display a dialog for entering your registration information.

EViews will fill out as many fields in this dialog as possible. If you wish to continue with the auto registration process, make sure that the entries in the **Serial #** and **Name** fields are filled in with the relevant information. When you click on the **Register now** button, EViews will attempt to contact one of our registration servers and, if successful, will transmit the information contained in the dialog to the server. The server will process the information and the machine will be registered to run EViews.

You should see a message indicating that registration was completed successfully, along with the number of machines that have been registered to the serial number.



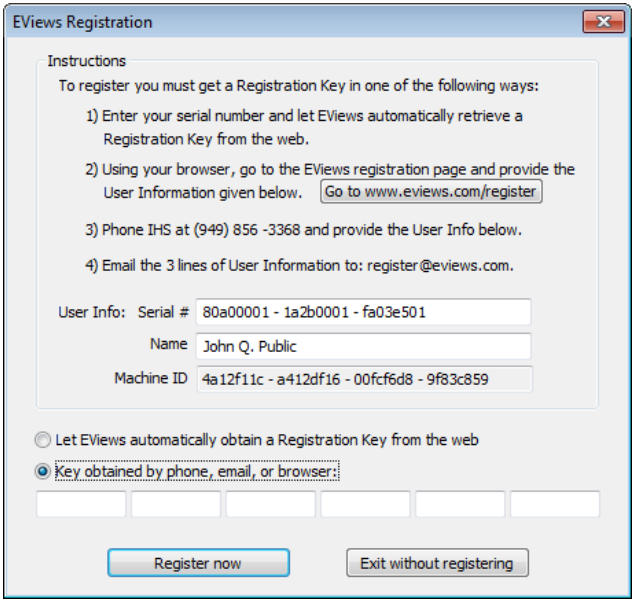
If you do not wish to continue with auto registration, click on the **Exit without registering** button and you will be returned to the main registration screen.

Note that there are some circumstances in which auto registration will fail. Obviously, auto registration will not work if the computer is not connected to the Internet. If registration fails, you should first verify that you have Internet access. Second, your computer may be behind a firewall which does not allow the required communication between your computer and our servers. Furthermore, while unlikely, it is possible that all of our registration servers are temporarily unresponsive.

If you continue to have problems with auto registration, you can choose to register manually as described in the next section, or you can contact us for assistance.

Manual Registration

If auto registration fails or if you prefer not to use the automatic registration features, you may elect to register manually. From the main registration page, click on **Manual Registration...** to display the manual registration portion of the dialog:



You must fill in the three fields in the dialog: the 2-character serial number, your name, and a 36-character registration key you must first obtain via web browser, phone, or email. EViews will help you by filling in as many fields as possible.

The easiest method of retrieving the registration key is via web browser. If you have access to an Internet connected browser, navigate to

http://www.eviews.com/register/

which will direct you to our registration servers. Follow the links to the registration page, and fill in the form. Enter your name, serial number, and the machine ID number as displayed in this registration dialog into the form. Click on the **Submit the form** button. You will be provided with the 36-character registration key.

Once you have obtained the key, return to the registration dialog in EViews. If necessary, select **Help/EViews Registration...** from the EViews main menu to display the registration page.

Make certain that you have entered your name and serial number *exactly* as provided when you obtained the registration key, and enter the key in the registration key box. Click **OK** to finish the registration process. Note that you should be able to copy-and-paste the registration key information from your browser into the dialog edit fields.

If all of the information is entered correctly, you will be informed that your registration is complete.

If you do not have access to a working web browser, you can contact our office via email, phone, or standard post to obtain the key:

IHS Global Inc.
Attn: Registration
4521 Campus Drive, #336
Irvine, CA 92612
Email: register@eviews.com
Phone: 949-856-3368

Please provide a registration name, full 24-character serial number, and the machine ID number. We will then provide you with the 36-character registration key.

If you receive the key via email, you should be able to copy-and-paste the key information into the dialog edit fields.

Contact Information

Once registration is completed, EViews will display an optional contact page form. You may submit this form to send name, address, phone number, and email information to IHS Global Inc. This information is for our records only and will not be redistributed to others.

Frequently Asked Questions about Registration

While the registration procedure should be straightforward, we understand that you may still have questions. The following are answers to the most frequently asked questions:

- *How do I find my serial number and other information about my copy of EViews?*

  Your copy of EViews contains information about your registration status, as well as the product version and build date of the program. To obtain this information, simply select **Help/About EViews** from the main EViews menu.

- *I contacted you and received a key, but the key doesn't seem to work. What could be wrong?*

  The most common registration problem results from entering a name or serial number which does not match the key. You should make certain that the name and serial number both match those provided when obtaining a key. Note that while the name is not case-sensitive, it should otherwise be entered *exactly* as originally provided. If you still experience problems, do not hesitate to contact our office.

- *My copy of EViews does not appear to have the features for the edition that I purchased. Do you have to send me a new CD-ROM?*

  No. Simply contact our office. Once we verify the edition of EViews that you have purchased, you should be able to reregister and upgrade your copy to enable the features.

- *I've replaced my computers and no longer have available registrations. What should I do?*

  If there are special circumstances where you need to register an additional machine, please contact our office.

- *How do I change the name in which my copy is registered?*

  Your copy of EViews contains the name in which it was first registered. If you wish to change the registration name, please contact our office.

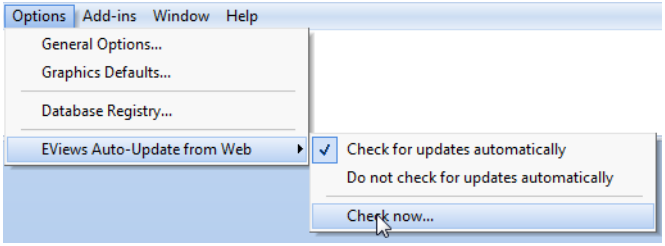
- *What if I have trouble registering?*

  We do not anticipate that you will have problems registering your copy of EViews using one of the available methods (auto-registration, manual using our web servers, or manual using email or phone). Please feel free to contact our office if you encounter difficulties.

Updating Your Copy of EViews

EViews 8 offers an automatic updating feature that can check for new updates every day, and install an updated version if available. (The automatic update feature can be enabled or disabled from the **Options/EViews Auto-Update from Web** menu item.)

Alternately, you may manually check for updates from within EViews at any time by selecting **Check now...** under the **EViews Auto-Update from Web** menu item, or by selecting **EViews Update** from the **Help** menu.



You may also visit the EViews website to check for updates to the EViews program and other components (documentation, sample data, and sample programs). Use your browser to go to:

http://www.eviews.com

and navigate to the downloads area. Downloading updates *will not* require re-registration of EViews on any previously registered computer. Simply download the update, run the installer, and you will have the latest shipping copy of your software.

Where to Go For Help

Your EViews installation includes documentation in the form of an interactive Help System and PDF versions of the manuals. User-provided online support is available via the EViews Forum.

The Help System

All of the EViews documentation may be viewed from within EViews using the help system. To access the EViews help system, go to the main menu and select **Help/EViews Help Topics...** or click on **Help/Quick Help Reference** and select a topic to jump directly to relevant subsections.

Note that the Help system may contain updates to the documentation that were made after the manuals went to press.

The EViews Manuals (PDF Files)

Your EViews installation includes copies of the EViews manuals in Adobe Portable Document Format (.PDF) file format.

If you elected to include the electronic versions of the manuals in your EViews installation, you may access the PDF files from within EViews by clicking on **Help** in the main EViews menu and selecting the file of interest. Alternately, you may navigate to the "Docs" subdirectory of your EViews installation directory to access the files directly.

Note that the PDF versions of the documentation may have been updated with corrections so that the material in the PDFs may differ from the printed manuals.

The EViews Forum

To supplement the information provided in the manuals and the help system, we encourage you to visit the EViews Online Forum, where you can find answers to common questions about installing, using, and getting the most out of EViews. The EViews Forum is an ideal place to ask questions of and share information with other EViews users.

The forum address is:

http://forums.eviews.com

What's New in EViews 8

EViews 8 features a wide range of exciting changes and improvements. The following is an overview of the most important new features in Version 8.

Performance

- 64-bit EViews ("64-bit Version" on page 14).

General EViews Interface

- Enhanced dialog edit fields ("Enhanced Dialog Edit Fields," on page 14).
- Workfile details view ("Workfile Details" on page 16).
- Workfile compare ("Workfile Compare" on page 16).
- Global options export and import ("Global Options Export and Import" on page 17)
- Object Linking and Embedding (OLE) support ("Object Linking and Embedding (OLE)" on page 27).
- User-defined objects ("User-Defined Objects" on page 47).
- Add-ins support for version handling ("Add-Ins Management" on page 48)

Data Handling

- Powerful new spreadsheet editing tools ("Spreadsheet Editing Tools," on page 17).
- Group data comparison tools ("Group Data Comparison Tools," on page 19).
- Auto-series defined across workfile pages ("Auto-Series Across Workfile Pages," on page 20).
- Enhanced dated data table offer enhanced customization with full command line support ("Dated Data Table Support" on page 20).
- Custom panel spreadsheet display ("Custom Panel Spreadsheet Display" on page 21).
- Support for connecting to the CEIC database ("Direct Support for CEIC Databases" on page 22).
- Write Support for Excel XLSX files ("Support for Writing Excel XLSX Files" on page 23).
- Transposed foreign data reads ("Transposed Foreign Data Reads," on page 23)

- Custom object attributes ("Custom Object Attributes" on page 23).

Graphs, Tables, and Spools

- The visible sample for graphs can be actively changed using a slider bar within the graph window ("Graph Sample Slider Bar" on page 24).
- Custom lines and arrows can be drawn in graphs using the mouse ("Custom Graph Lines and Arrows" on page 25).
- Users may specify their own lines on scatter plots ("User-Defined Fit Lines" on page 26).
- Graphs, tables, and spools can now be saved in PDF format ("PDF and Enhanced Metafile Export" on page 26). Additionally, tables may be saved as Enhanced Metafiles (emf).
- Graphs, tables, and spools can be pasted as embedded objects or links into third-party applications such as Microsoft PowerPoint, Word, and Excel ("Object Linking and Embedding (OLE)" on page 27).
- Enhanced dated data table offer enhanced customization with full command line support ("Dated Data Table Support" on page 20).

Models

- Improved model data editing ("Improved Model Data Editing" on page 28).
- Solution comparison tools ("Comparing Solution Data" on page 29).
- Other model commands ("Other Model Commands" on page 30).

Econometrics and Statistics

Computation

- Error-Trend-Seasonal exponential smoothing (Hyndman *et al.*, 2002 and Hyndman *et al.*, 2008) ("ETS Exponential Smoothing" on page 31).
- Census X-13 ("Census X-13" on page 32).
- Panel series covariances ("Panel Covariances" on page 33).
- Panel series principal components ("Panel Principal Components" on page 34).

Estimation

- Switching regression (both exogenous and Markov) ("Switching Regression" on page 35).
- Bayesian Vector Autoregression (VARs) ("Bayesian Vector Autoregression (VARs)" on page 36).

- Robust least squares ("Robust Least Squares" on page 37).
- Breakpoint regression("Breakpoint Regression" on page 38).
- Heckman selection models("Heckman Selection Models" on page 39).
- Panel cointegration estimation("Panel Cointegration Estimation" on page 40).
- User-defined optimization ("User-Defined Optimization" on page 41).

Testing and Diagnostics

- Multiple breakpoint testing ("Multiple Breakpoint Testing" on page 42).
- Panel serial correlation tests ("Panel Serial Correlation Tests." on page 43).
- Panel causality tests ("Panel Causality Tests" on page 43).
- Heteroskedasticity and autocorrelation consistent (HAC) covariances in GLM models ("HAC covariances in GLM models" on page 44).
- Enhanced quantile regression process graphs and testing ("Quantile Regression Process Subsets" on page 45).

Miscellaneous

- ARMA specification of multiple lags by range ("ARMA Specification by Range" on page 45).
- User-specified default coefficients for models specified by list ("User-Specified Default Coefficients" on page 46).
- Automatic computation of robust Wald statistic for non-intercept coefficients in models estimated with White or HAC covariances ("Robust Wald F-statistics" on page 47).

Programming Support

- User-defined objects ("User-Defined Objects" on page 47).
- Add-ins support for version handling ("Add-Ins Management" on page 48)
- Program editor and execution enhancements ("Program Editor & Execution Enhancements," on page 48).
- New functions for generating series ("Series Generating Functions" on page 50).
- Added matrix language tools ("Matrix Language Tools" on page 51).
- New workfile functions ("Workfile Support," on page 52).
- Enhanced table support ("Table Support," on page 53).
- New general information tools ("General Information Tools," on page 53)

- New object data members ("Object Data Members," on page 54).
- List of new and updated global and object commands ("Updated Command and Object List" on page 56).
- List of new functions ("Updated Function List" on page 60).

EViews 8 Compatibility Notes

- Compatibility notes for users of EViews 7 ("EViews 8 Compatibility Notes" on page 61).

Performance

64-bit Version

EViews is now available in both 32 and 64-bit versions.

One of the advantages of using a 64-bit version of Windows is the ability to access physical memory (RAM) beyond the 4-gigabyte (GB) range. By comparison, 32-bit versions of Windows are limited to a maximum of approximately 3.2 gigabytes of memory.

The 64-bit version of EViews 8 allows access to the larger amounts of physical RAM in machines running 64-bit Windows, allowing you to work with much bigger workfiles, both in terms of the number of observations per workfile page, and the number of individual objects allowed in a page.

For example, 32-bit versions of EViews only allow a maximum of 15 million observations in a page (and even then we recommend much smaller workfile ranges). The 64-bit version of EViews 8 allows up to 120 million observations per page. Similarly, the 32-bit versions of EViews can exhaust available memory with more than a few hundred thousand objects in the workfile, while the 64-bit version supports workfiles with millions of objects.

- See "Memory Allocation" on page 777 of *User's Guide I*.

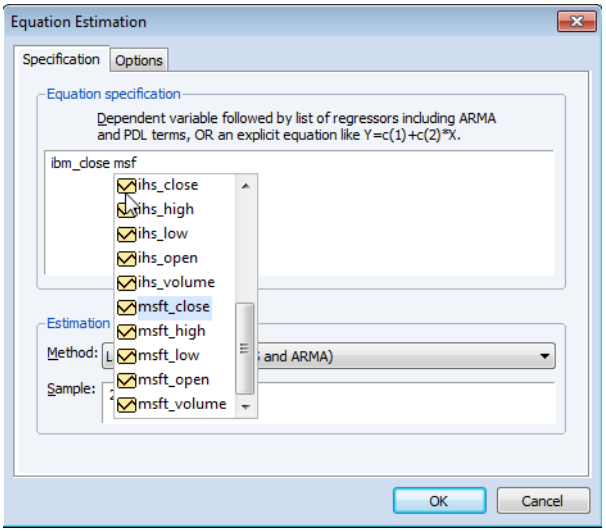
General EViews Interface

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

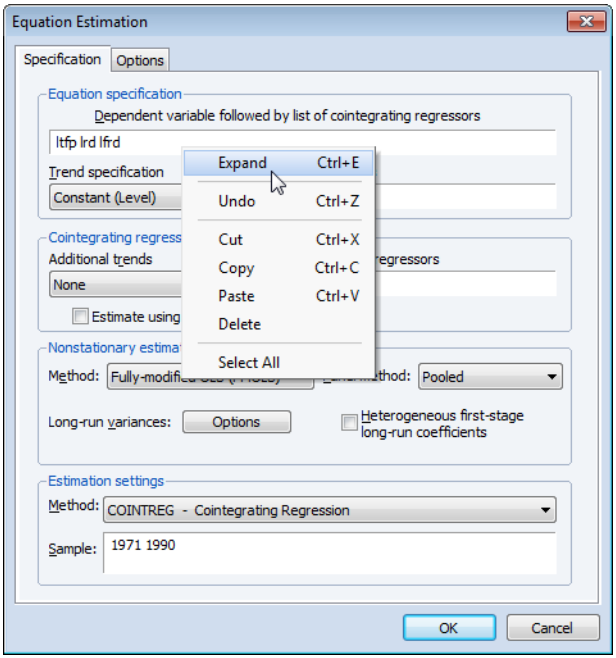
Enhanced Dialog Edit Fields

Edit fields (boxes that let you type an entry) in EViews 8 have been enhanced with two new features: smart auto-complete and expansion.

Smart auto-complete allows you to quickly enter object names in edit fields, by bringing up a list of objects in the current workfile from which you may select to populate the edit field.



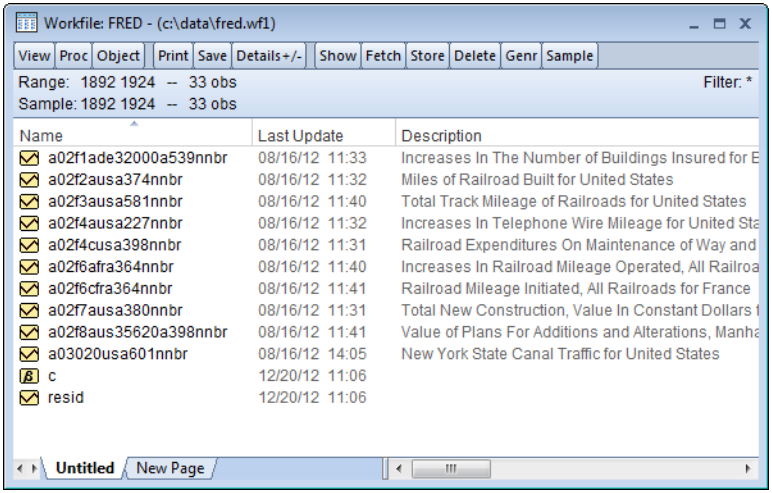
Edit field expansion lets you increase the size of edit fields in EViews so that you may more easily see and enter information. To expand an edit field, simply double click on the white space in the box, or right click and select **Expand**.



- See "Custom Edit Fields in EViews" on page 10 of *User's Guide I* for additional discussion.

Workfile Details

EViews 8 features a new look workfile **Details** view. You may toggle between the ordinary workfile display and the **Details** view by clicking on the **Details** +/- button on the workfile.

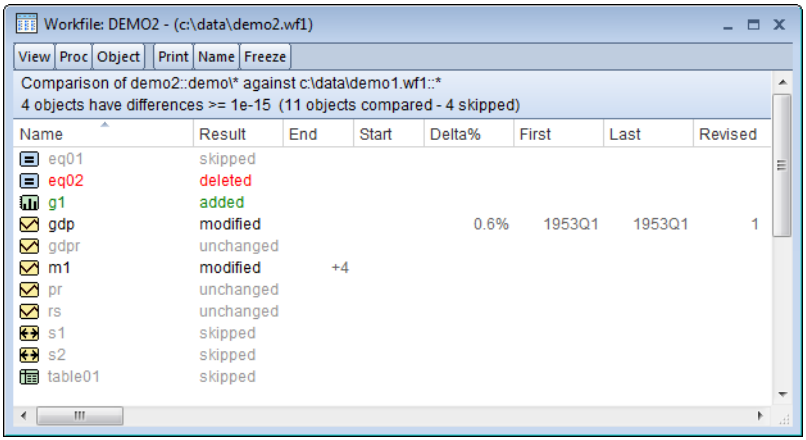


Each object attribute now has a separate column in the details view, and you may sort the objects by an attribute by clicking on the column header. Columns are also draggable and resizable, allowing you to alter their position and width. If you right-click on a column header, you may also choose which columns to display.

- See "Workfile Details Display" on page 62 of *User's Guide I* for discussion.
- See `wfdetails` (p. 471) in the *Command and Programming Reference* for command support.

Workfile Compare

The new **Workfile Compare** view, available from the **View** menu on a workfile allows you to compare the differences between a workfile and another workfile stored on disk. Once you have chosen a second workfile with which to compare, EViews will display a list of all objects in the two workfiles, and let you see how those objects differ.



- See "Comparing Workfiles" on page 88 of *User's Guide I* for discussion.
- See `wfcompare` (p. 465) in the *Command and Programming Reference* for command support.

Global Options Export and Import

You may now write your global options settings to disk for backup and update your settings from an existing settings file. One use for these commands is to establish a set of global options settings which are then saved and then moved to different machines or distributed to other users.

The `optsave` command saves a copy of the current EViews global options settings ".INI" files into a directory. Any existing option settings in the directory will be overwritten.

You may use the `optset` command to replace the current EViews global options settings ".INI" files with ones from a different directory.

- See `optsave` (p. 384) in the *Command and Programming Reference*.
- See `optset` (p. 385) in the *Command and Programming Reference*.

Data Handling

EViews 8 offers a variety of new features for working with data.

Spreadsheet Editing Tools

EViews 8 provides sophisticated new tools for editing and adjusting the values in an EViews series or group.

Typically, the primary method of generating series values is to use a series expression. EViews will evaluate the series expression for all observations in the current sample and assign values accordingly. Note that working with subsets of data requires specifying a new sample for each subset operation. Alternately, standard editing of series values by entering numbers can be cumbersome, at best.

EViews 8 changes all of this by providing tools that allow you to enter and modify individual values in a series using a powerful array expression language, and to view the effects of those changes on the series values.

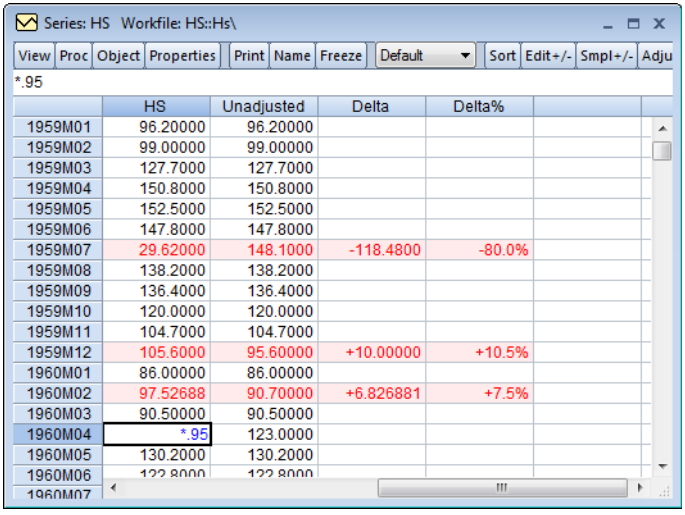
Edit Mode

Standard editing now allows you to use the expression language to assign or modify one or more cells. When Edit mode is enabled by toggling the **Edit +/-** button, you may simply select the cells you wish to edit, then use array expressions to describe how you would like the multiple cells to be modified.

- See Appendix B. "Enhanced Spreadsheet Editing," on page 783 of *User's Guide I*.

Adjust Mode

EViews 8 offers an adjust mode which may be enabled by toggling the **Adjust +/-** button on the spreadsheet toolbar. The adjust mode allows you to use sophisticated editing tools to make prospective changes in the series and to see the impact of those changes in an interactive fashion. These changes may be specified in natural units, so, for example, if you wish to examine the impact of a 10% increase in the values in a series over some range, you simply tell EViews that "Delta %" equals 10.



	HS	Unadjusted	Delta	Delta%
1959M01	96.20000	96.20000		
1959M02	99.00000	99.00000		
1959M03	127.7000	127.7000		
1959M04	150.8000	150.8000		
1959M05	152.5000	152.5000		
1959M06	147.8000	147.8000		
1959M07	29.62000	148.1000	-118.4800	-80.0%
1959M08	138.2000	138.2000		
1959M09	136.4000	136.4000		
1959M10	120.0000	120.0000		
1959M11	104.7000	104.7000		
1959M12	105.6000	95.60000	+10.00000	+10.5%
1960M01	86.00000	86.00000		
1960M02	97.52688	90.70000	+6.826881	+7.5%
1960M03	90.50000	90.50000		
1960M04	*.95	123.0000		
1960M05	130.2000	130.2000		
1960M06	122.8000	122.8000		
1960M07				

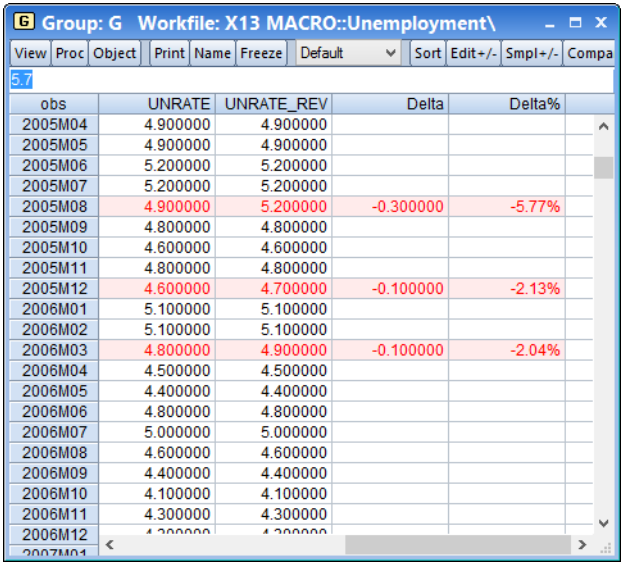
Since changes made in adjust mode are not permanent unless specifically made so when you close the series window, this powerful tool you to changes to a series to perform quick "what if" analysis without permanently changing the series.

- See "Series Adjust" on page 382 and Appendix B. "Enhanced Spreadsheet Editing," on page 783 of *User's Guide I*.
- See also `Series::adjust` (p. 481) in the *Object Reference* for command tools for editing a series using these expressions.

Group Data Comparison Tools

EViews 8 lets you easily compare the data between the series in your group. When looking at the **Spreadsheet** view of the group, simply press the **Compare +/-** button on the toolbar to enter compare mode. Compare mode will behave differently depending upon whether there are only two series in the group, or more than two.

In both cases the main feature of compare mode is that it will highlight, in red, any observations for which the series in the group have different values. This can be useful when comparing revisions to series in order to quickly find for which observations any revisions or changes have been made.



obs	UNRATE	UNRATE_REV	Delta	Delta%
2005M04	4.900000	4.900000		
2005M05	4.900000	4.900000		
2005M06	5.200000	5.200000		
2005M07	5.200000	5.200000		
2005M08	4.900000	5.200000	-0.300000	-5.77%
2005M09	4.800000	4.800000		
2005M10	4.600000	4.600000		
2005M11	4.800000	4.800000		
2005M12	4.600000	4.700000	-0.100000	-2.13%
2006M01	5.100000	5.100000		
2006M02	5.100000	5.100000		
2006M03	4.800000	4.900000	-0.100000	-2.04%
2006M04	4.500000	4.500000		
2006M05	4.400000	4.400000		
2006M06	4.800000	4.800000		
2006M07	5.000000	5.000000		
2006M08	4.600000	4.600000		
2006M09	4.400000	4.400000		
2006M10	4.100000	4.100000		
2006M11	4.300000	4.300000		
2006M12	4.200000	4.200000		
2007M01				

- See "Group Comparison Tools" on page 467 of *User's Guide I*.
- See Appendix B. "Enhanced Spreadsheet Editing," on page 783 of *User's Guide I*.
- See also `Series::adjust` (p. 481) in the *Object Reference* for command tools for editing a series using these expressions.

Auto-Series Across Workfile Pages

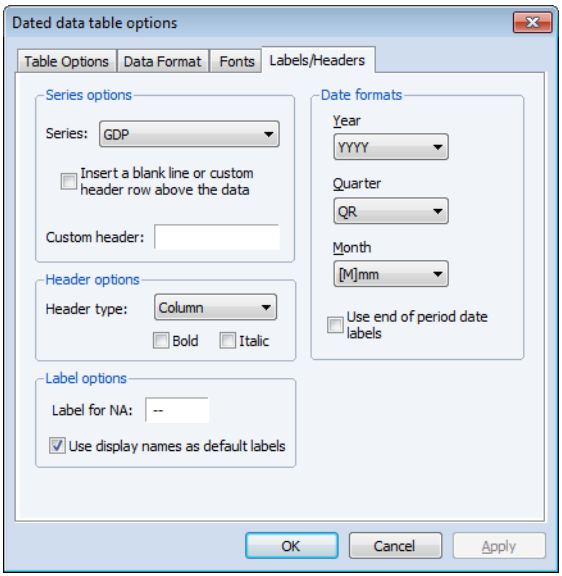
You may now access series in different workfile pages directly without the need to copy them across to the current workfile page either as a link or as a direct copy. Whenever you wish to use a series located in a separate page, you can refer to it using the syntax *pagename\seriesname*. Examples of useful places to use this functionality include group definitions, equation specifications, or when generating a new series.

- See "Auto-series Across Pages" on page 182 of *User's Guide I* for discussion and limitations.

Dated Data Table Support

Dated data tables have been improved with added customization options, including unit and label formatting, font and color selection on an individual series level, and tools for customizing date format and appearance.

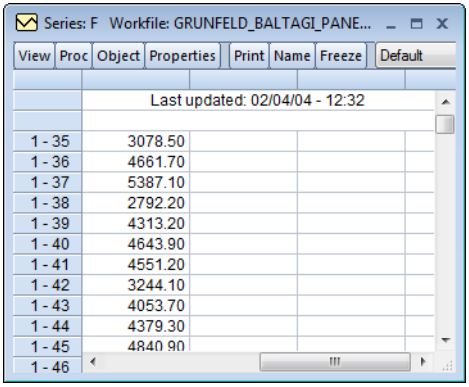
Additionally, program language support is now offered for the customization of dated data tables.



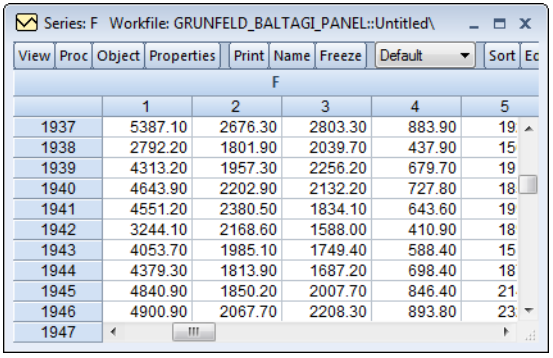
- For details, see "Dated Data Table" on page 469 of *User's Guide I*.
- See `Group::ddtabopts` (p. 277) in the *Object Reference*.
- See `Group::ddrowopts` (p. 275) in the *Object Reference*.

Custom Panel Spreadsheet Display

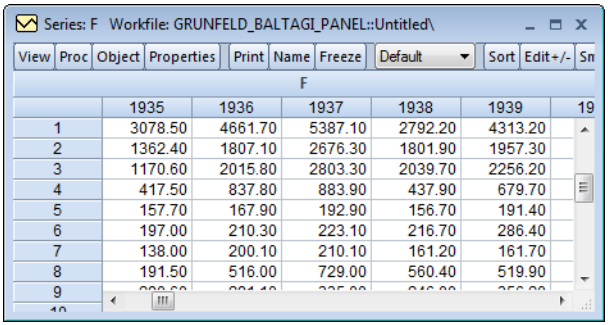
You may now change the default spreadsheet view of a series in a panel workfile which shows each cross-section's data stacked on top of another cross-section's data by clicking on the **Wide** +/- button (you will almost certainly need to widen the window to see the button as it is far to the right of the more commonly used buttons).



The first time you click the button, EViews will change the display of the series such that each row of the spreadsheet contains data for a specific date, and each column contains data for a cross-section.



Clicking the **Wide** +/- button a second time transposes this so cross-sections are now shown per row, and dates per column.

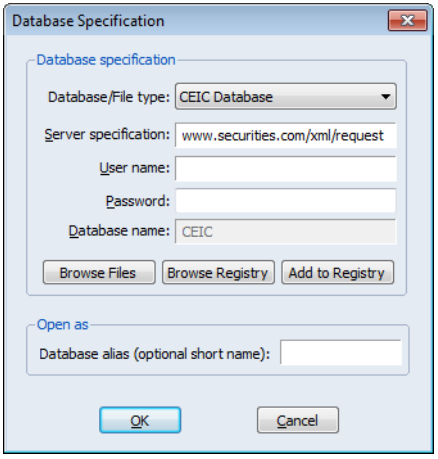


A third click of the button takes the view back to the original stacked form.

Direct Support for CEIC Databases

EViews 8 Enterprise Edition supports direct access to CEIC databases using the standard EViews database interface.

The CEIC database includes economic, sector and financial data. Data are fetched from the internet by Internet Securities, Inc. (also known as IS Emerging Markets) XML based data servers.



- See "CEIC" on page 334 of *User's Guide I* for brief discussion.
- See dbopen (p. 322) in the *Command and Programming Reference* for command line support.

Support for Writing Excel XLSX Files

EViews now offers write support for Excel XLSX files. Previously, EViews 7 offered read, but not write, support for XLSX files, and prior versions of EViews did not support the format.

To write an Excel XLSX file, simply choose this format when saving your workfile or workfile page, and follow the dialog prompts. You may also use the "type = excelxml" option in the `pagesave` or `wfsave` commands, as in

```
pagesave(type=excelxml) new_wf
```

which saves the current workfile page in the Excel XLSX file "new_wf".

- See `pagesave` (p. 402) in the *Command and Programming Reference*.
- See `wfsave` (p. 485) in the *Command and Programming Reference*.

Transposed Foreign Data Reads

In EViews 8 You may now read transposed data from a foreign file into a new or existing workfile page using the **File/Open Foreign Data as Workfile...**, **Proc/Load Workfile Page...**, or **Proc/Import/Load Workfile Page...** dialogs.

Previously you could only read transposed data into an existing workfile page using the older (now mostly deprecated) **Proc/Import/Import from File...** dialog and the corresponding `read` command, which supported fewer foreign source formats. Notable among the formats that `read` did not support was Excel ".XLSX".

In addition, you may employ the `wfopen`, `pageload`, and `import` commands to read transposed data. Simply add the `byrow` specifier as part of your *table_description*, as in

```
wfopen(page=GDP) "c:\data_t.xlsx" range="GDP data" byrow @drop X
```

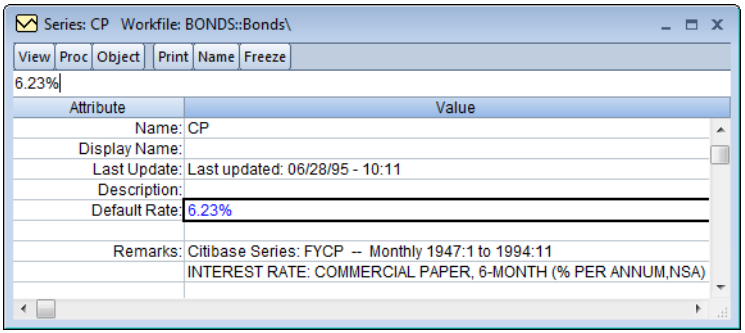
reads the transposed data contained in the "GDP data" range of the Excel file "Data_t.XLSX" into a new workfile. The data for the series X is dropped, and the name of the new workfile page is "GDP".

- See `wfopen` (p. 472) in the *Command and Programming Reference*.
- See `pageload` (p. 400) in the *Command and Programming Reference*.
- See `import` (p. 359) in the *Command and Programming Reference*.

Custom Object Attributes

Objects in an EViews workfile may now be assigned custom attributes. These attributes may be used by search queries in EViews workfile and database operations (*i.e.*, `@wquery` (p. 680) in the *Command and Programming Reference*). In some cases, EViews will be able to import custom attributes along with the data from third-party databases.

You may create or edit a custom attribute by clicking on the **Label** view of an object, and typing the name of the custom attribute below the **Description** field and the value of the attribute in the field to the right.

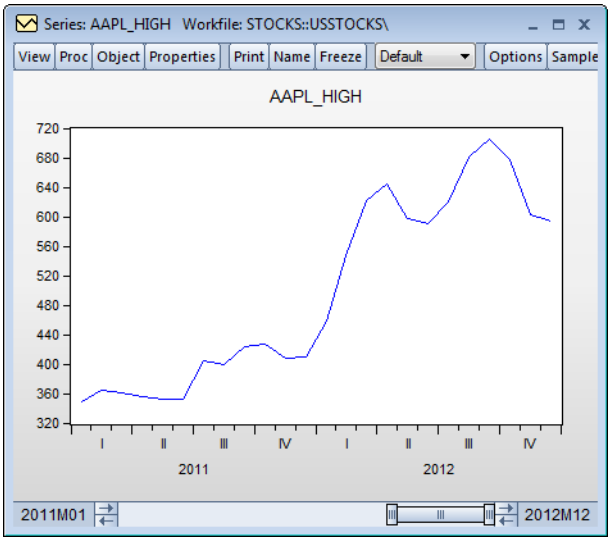


- See "Adding Your Own Label Attributes" on page 65 and "Adding Custom Attributes in the Label View," on page 103 of *User's Guide I* for discussion.
- The `setattr` object command may be used to set attribute values for each object type. See, for example, `Series::setattr` (p. 522) in the *Object Reference* for series command line support.
- You may use the object data member `@attr("arg")` to obtain the string containing the value of the *arg* attribute, where the argument is specified as a quoted string.
- See `@wquery` (p. 680) in the *Command and Programming Reference* for command support for queries using custom attributes.

Graphs, Tables, and Spools

Graph Sample Slider Bar

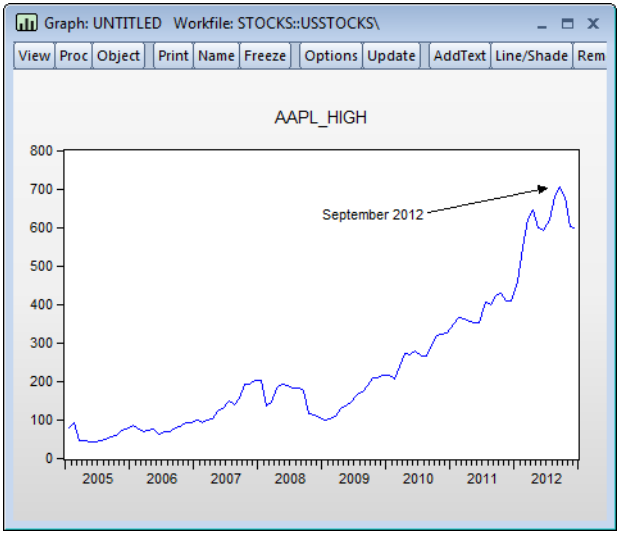
EViews 8 graphs now feature a *sample slider bar*, located at the bottom of a sample based graph window which allows you to adjust dynamically the sample displayed in the graph window by resizing and moving the slider bar:



- For discussion, see "The Graph Sample" on page 555 of *User's Guide I*.

Custom Graph Lines and Arrows

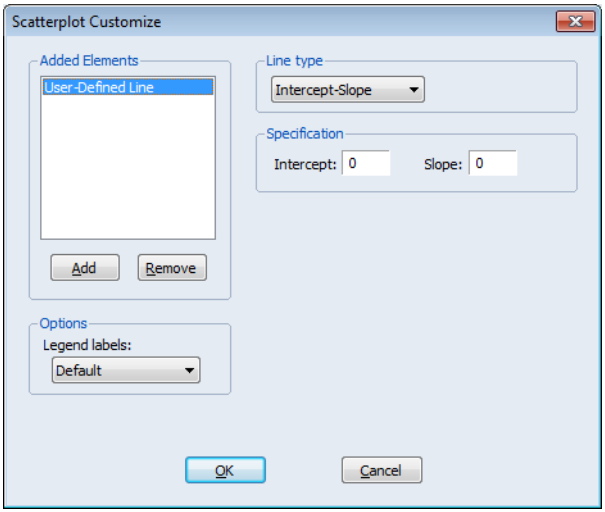
It's often useful to accentuate a data point in a graph or draw a comparison between two points. In EViews 8, you can draw custom straight lines at any angle, anywhere in a frozen graph window. You may also choose from multiple designs for the arrowheads, including none (plain line), filled arrow, and open arrow.



- See "Drawing Lines and Arrows" on page 665 of *User's Guide I* for discussion.
- See `Graph::addarrow` (p. 211) in the *Object Reference* for command details.

User-Defined Fit Lines

Just as you may wish to highlight a particular data point in your graph with an arrow, you might like to add custom fit lines to a scatter plot. Earlier versions of EViews supported fit lines drawn using calculations based upon the underlying data. The new fit line option, **User-defined**, lets you specify your own definition line definition.

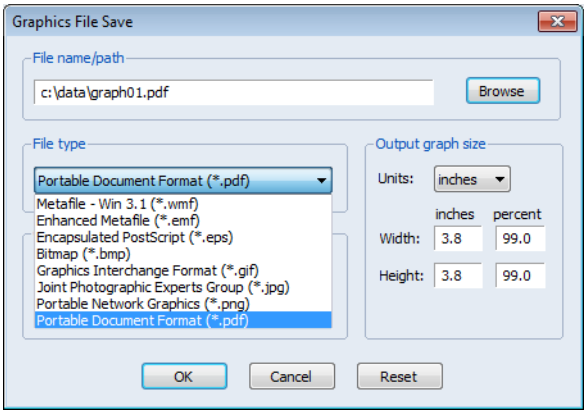


- See "User-Defined Fit Lines" on page 620 of *User's Guide I* for discussion.
- See `dbopen` (p. 322) in the *Command and Programming Reference* for command line support.

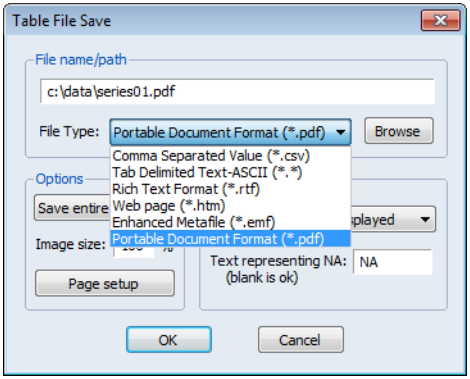
PDF and Enhanced Metafile Export

The PDF format is one of the most commonly used standards for saving and sharing documents, and is arguably *the* standard for documents on the web. EViews 8 now supports the saving of graph, table, and spool output to PDF. In addition, table output may now be saved to Enhanced Metafile (EMF) format.

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.



Notice that Enhanced Metafile now appears as a supported output type for table objects in EViews 8:

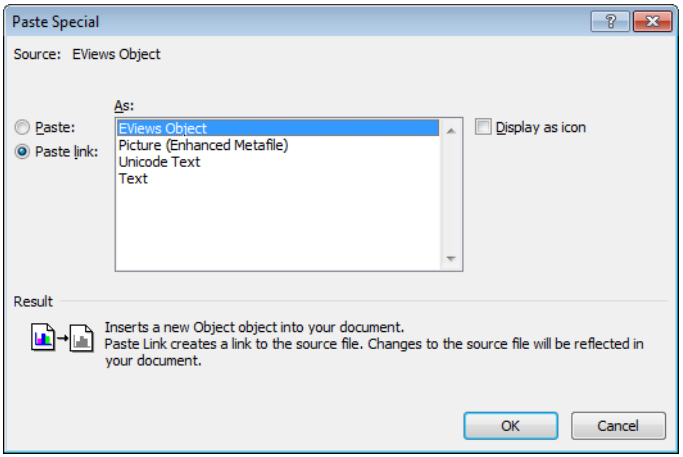


For command line support, see

- `Graph::save` (p. 238) in the *Object Reference*.
- `Table::save` (p. 698) in the *Object Reference*.
- `Spool::save` (p. 609) in the *Object Reference*.

Object Linking and Embedding (OLE)

EViews 8 support for OLE offers you the ability to have your output data and graphs update whenever you make changes within EViews.



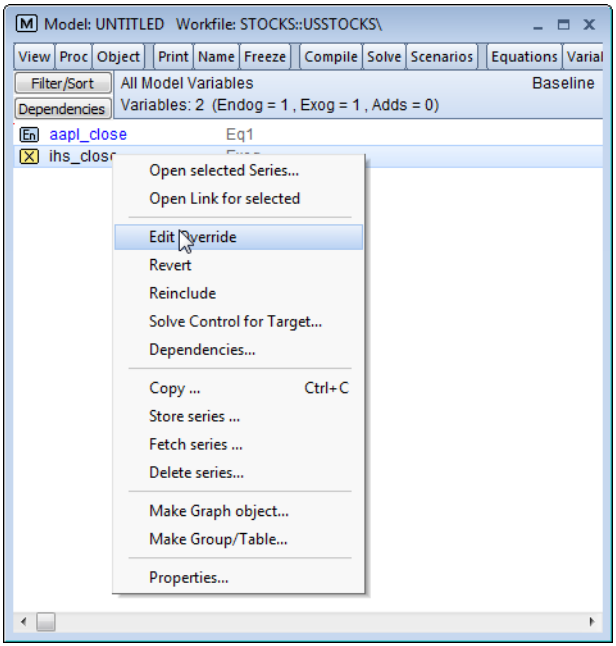
You may use OLE to paste links to EViews objects in your external document so that the underlying information is tied to the EViews workfile. Then, any time modifications are made in EViews, the changes may be pushed to the objects in your document. Alternately, you may use OLE to embed graph and table output in external documents so you may later modify the appearance of the output using EViews.

- See Chapter 18. "Object Linking and Embedding (OLE)," on page 729 of *User's Guide I* for additional information on using OLE with EViews.

Models

Improved Model Data Editing

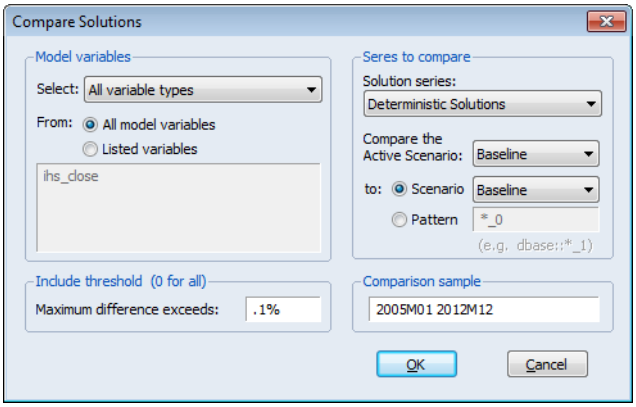
EViews 8 offers improved tools for managing variables in a model. You may use the new **Edit override** right button menu item, available from the variables view of a model, to quickly exclude, override and edit endogenous and exogenous variables for the current scenario.



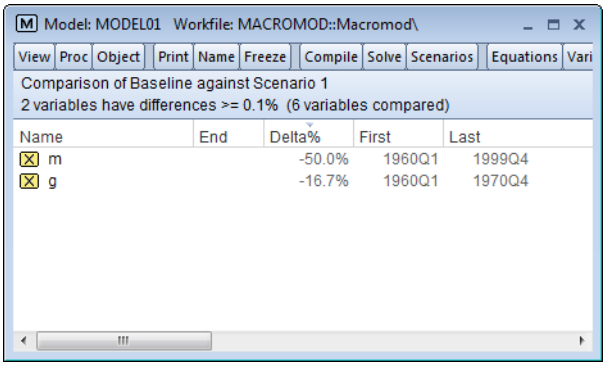
- See "Scenario Editing Tools," on page 653 of *User's Guide II* for additional information on using the edit override tools.
- See `Model::adjust` (p. 375) in the *Object Reference*.
- See `Model::revert` (p. 394) in the *Object Reference*.
- See `Model::reinclude` (p. 391) in the *Object Reference*.

Comparing Solution Data

EViews 8 offers new tools for quickly viewing differences between the solution values for different scenarios. You may use the new model object **Compare solutions** menu item, available from the **View** menu to specify the comparisons of interest



and to produce a comparison table:



- For discussion and details, see "Comparing Solution Data," on page 679 in the *User's Guide II*.
- See also the documentation for the `Model::compare` (p. 378) command in the *Object Reference*.

Other Model Commands

In addition, there are several new model commands and commands which have changed to allow for additional options or features (all of these entries are in the *Object Reference*):

drop ..... drop equations for one or more endogenous variables in the model (p. 381).

droplink ..... drop linked objects from the model (p. 381).

exclude..... specifies (or merges) excluded endogenous variables in the active scenario *(new features)* (p. 382).

makegraph.....make graph object showing model series *(with new features)* (p. 386).
makegroup.....make group out of model series and display dated data table *(with new features)* (p. 387).
override.....specifies (or merges) override series to the active scenario *(with new features)* (p. 391).
replace.....replace the text specification for an endogenous variable in the model with a new specification (p. 392).
replacelink.....replace a linked object with a different linked object (p. 393).
replacevar.....replace all instances of a variable in the text specification of a model with a different variable (p. 393).

Econometrics and Statistics

EViews 8 offers a variety of 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.

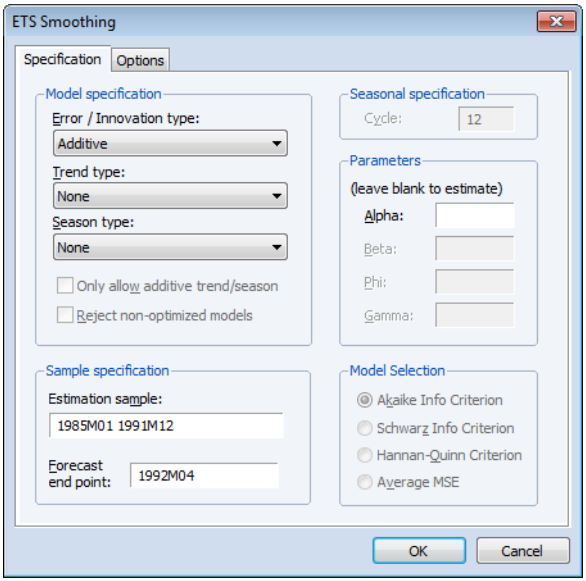
ETS Exponential Smoothing

EViews 8 now offers support for exponential smoothing using the dynamic nonlinear model framework of Hyndman, Koehler, *et al.* (2002).

The ETS (*E*rror-*T*rend-*S*easonal or *E*xponen*T*ial *S*moothing) framework which defines an extended class of exponential smoothing methods that encompasses standard ES models (*e.g.*, Holt and Holt–Winters additive and multiplicative methods), but offer a variety of new methods.

In addition ETS smoothing offers a theoretical foundation for analysis of these models using state-space based likelihood calculations, with support for model selection and calculation of forecast standard errors.

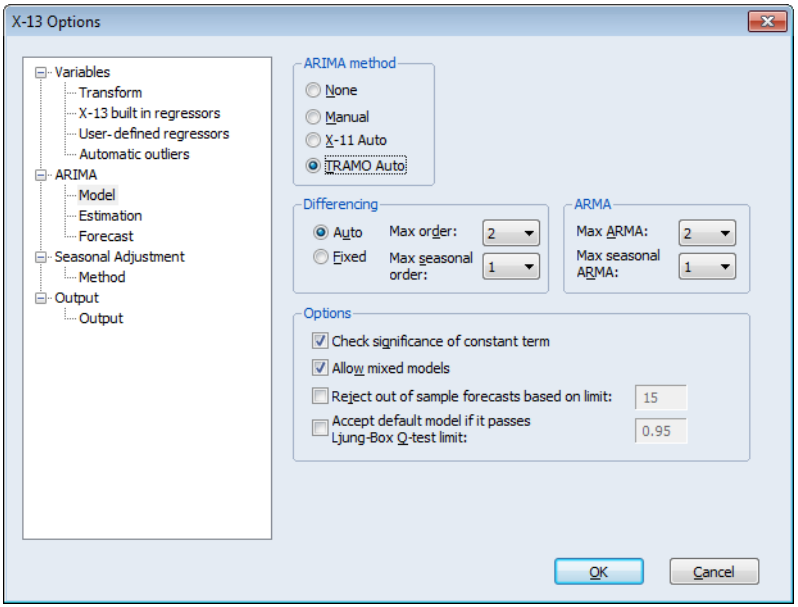
You will find this feature using the **Proc** menu for a series object.



- See "ETS Exponential Smoothing," beginning on page 432 in the *User's Guide I* for discussion.
- See also `Series::ets` (p. 495) in the *Object Reference* for command support.

Census X-13

EViews 8 offers an easy-to-use front-end for working with the U.S. Census Bureau's X-13 seasonal adjustment tools. In addition to providing a wide range of new features (including ARIMA regression prior to the seasonal adjustment step), X-13 is capable of performing updated versions of X-11/X-12 or TRAMO/SEATS ARIMA seasonal adjustment.



To perform X-13 seasonal adjustment, select **Proc/Seasonal Adjustment/Census X-13...** from the series window menu in a quarterly or monthly workfile.

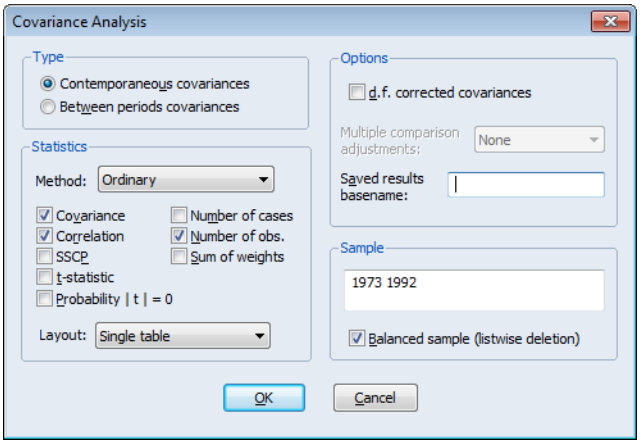
- See "Census X-13," beginning on page 394 in the *User's Guide I* for discussion.
- See also `Series::x13` (p. 554)in the *Object Reference* for command support.

Panel Covariances

Panel covariances and correlations are widely used in panel data analysis. For example:

- Contemporaneous correlations between macroeconomic variables are often used to examine the nature of relationships between different countries (see for example, Obstfeld and Rogoff, 2001, p. 368).
- The contemporaneous covariances of residuals from panel regression are used in computing cross-sectional Zellner SUR-type estimators (Johnston and Dinardo, 1997, p. 318) and in tests of cross-section dependence (Pesaran, 2004). Similarly, panel covariances are used as a first step in obtaining common factors for unit root and other tests (Bai and Ng, 2004).

EViews 8 now offers easy-to-use tools for computing the panel covariances and correlations for a series. Simply open the series, and select **View/Panel Covariance...** to display the dialog. *Note that the workfile must be structured as a panel for the panel covariance menu entry to be available.*



Note that you may compute measures of association between cross-sections (contemporaneous covariances) or between periods of a given cross-section.

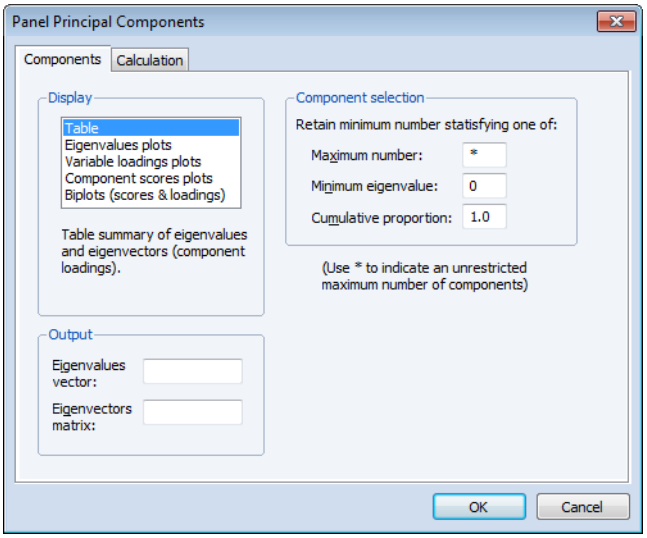
- See "Panel Covariances," beginning on page 825 in the *User's Guide II* for discussion.
- See also `Series::pancov` (p. 512) in the *Object Reference* for command support.

Panel Principal Components

In addition to computing measures of association for a series across cross-sections or periods ("Panel Covariances," beginning on page 33) EViews 8 also computes the principal components of the panel variable using one of the measures of association.

As with the other principal components tools in EViews, you may display the table of eigenvalues and eigenvectors, display line graphs of the ordered eigenvalues, and examine scatterplots of the loadings and component scores. Furthermore you may save the component scores and corresponding loadings to the workfile.

To compute and display the principal components results for a panel series, open the series, and select **View/Panel Principal Components...** to display the dialog. *Note that the workfile must be structured as a panel for the panel covariance menu entry to be available.*



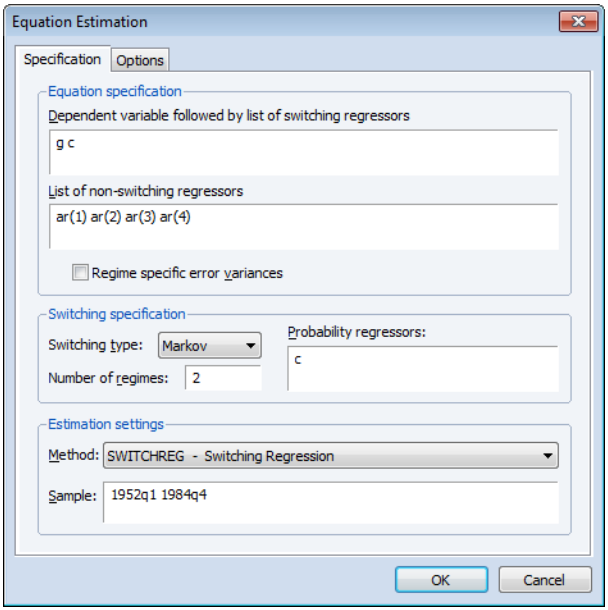
- See "Panel Principal Components," beginning on page 830 in the *User's Guide II* for discussion.
- See also `Series::panpcomp` (p. 515) in the *Object Reference* for command line documentation.
- See also `Series::makepanpcomp` (p. 508) in the *Object Reference*.

Switching Regression

EViews 8 now estimates single-equation *switching regression* models—linear regression models with nonlinearities arising from unobserved discrete changes in regime, including models with independent and Markov switching. EViews also offers tools for filtering, smoothing, and forecasting from your estimated equation.

Dynamics specifications are permitted through the use of lagged dependent variables as explanatory variables and through the presence of auto-correlated errors (Goldfeld and Quandt, 1973, 1976; Maddala, 1986; Hamilton, 1994; Frühwirth-Schnatter, 2006). The latter models, which are commonly referred to as "Hamilton switching models" have been of particular interest to applied researchers.

To display the switching regression dialog, first open an equation by selecting **Quick/Estimate Equation…** from the main menu and select **SWITCHREG - Switching Regression** in the **Method** combo, or enter the command `switchreg` in the command line:



For detailed discussion, see

- Chapter 13. "Switching Regression," beginning on page 389 in the *User's Guide II*.

See also the command line documentation for:

- `Equation::switchreg` (p. 141) in the *Object Reference*.
- `Equation::makergmprobs` (p. 114) in the *Object Reference*.
- `Equation::maketransprobs` (p. 115) in the *Object Reference*.
- `Equation::rgmprobs` (p. 134) in the *Object Reference*.
- `Equation::transprobs` (p. 146) in the *Object Reference*.

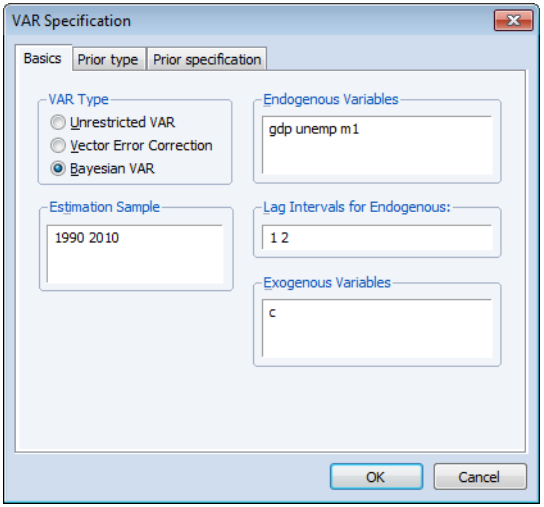
Bayesian Vector Autoregression (VARs)

EViews 8 now estimates Bayesian Vector Autoregression (BVAR) models which, as the name suggests, employ uses Bayesian methods to estimate a vector autoregression (VAR). EViews supports four different prior specifications on the parameters:

1. Litterman/Minnesota prior.
2. Normal-Wishart prior
3. Sims-Zha Normal-Wishart prior.
4. Sims-Zha Normal-flat

to provide shrinkage (restrictions on parameters to reduce the size of the parameter set) over the unrestricted least squares VAR estimates.

To estimate a Bayesian VAR in EViews, click on **Quick/Estimate VAR...** or type `var` in the command window. This will bring up the **VAR Specification** dialog. Select **Bayesian VAR** as the **VAR type** radio button.

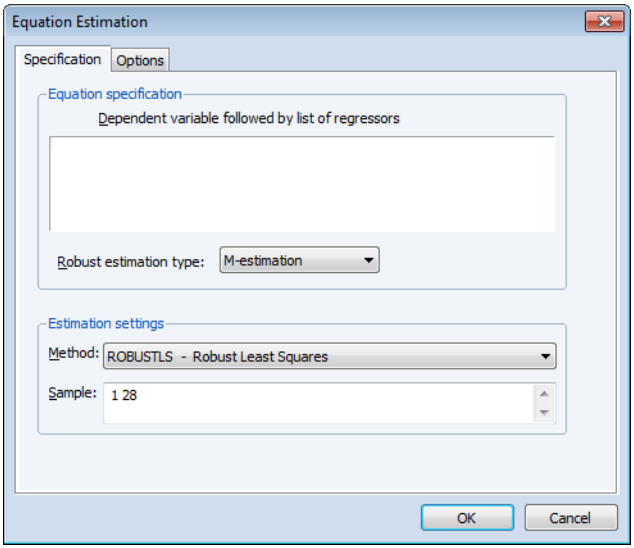


- See "Bayesian VAR" on page 578 in *User's Guide II* for discussion.
- See also the command line documentation for `Var::bvar` (p. 748) in the *Object Reference*.

Robust Least Squares

EViews 8 supports robust least squares regression methods designed to be *robust*, or less sensitive, to outliers. EViews offers three different methods for robust least squares: M-estimation (Huber, 1973), S-estimation (Rousseeuw and Yohai, 1984), and MM-estimation (Yohai 1987).

To estimate an equation using robust regression, open the equation dialog by selecting **Quick/Estimate Equation...**, by selecting **Object/New Object.../Equation** and selecting **ROBUSTLS** from the **Method** combo box, or by entering the `robustls` command in the command line.

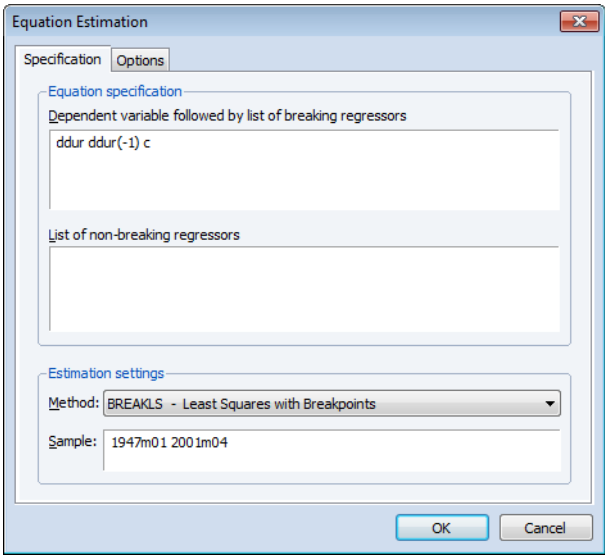


- See Chapter 11. "Robust Least Squares," on page 349 of *User's Guide II* for discussion.
- See also the command line documentation for `Equation::robustls` (p. 136) in the *Object Reference*.

Breakpoint Regression

EViews 8 offers new tools for estimating linear regression models that are subject to structural change. The regime breakpoints may be known and specified *a priori*, or they may be estimated using the Bai (1997) and Bai and Perron (1998), global maximizer or sequential methods, and related techniques. You may estimate "pure" breakpoint specifications in which all of the regressors have regime specific coefficients, or specifications in which only some coefficients vary with the regime.

To estimate an equation using least squares with breakpoints, select **Object/New Object.../Equation** or **Quick/Estimate Equation...** from the main EViews menu, then select **BREAKLS - Least Squares with Breakpoints** in the **Method** drop-down menu, or simply type the keyword `breakls` in the command window.



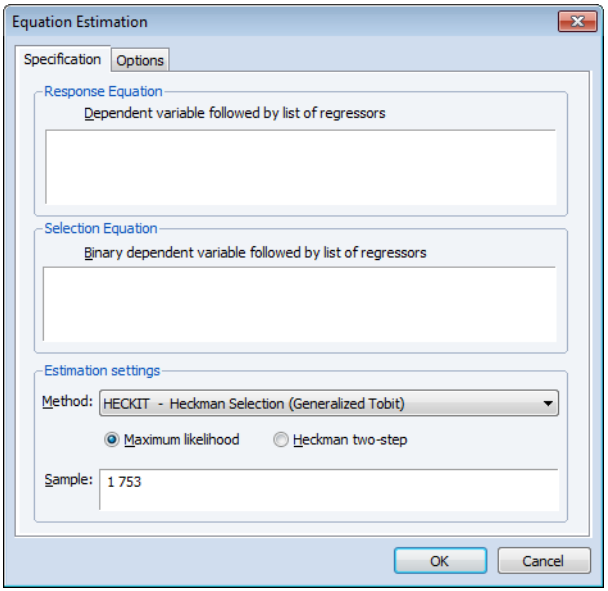
- See Chapter 12. "Least Squares with Breakpoints," on page 369 of *User's Guide II* for discussion.
- See also "Multiple Breakpoint Tests" on page 174 of *User's Guide II* for related testing procedures.
- See the command line documentation for `Equation::breakls` (p. 47) and `Equation::breakspec` (p. 50) in the *Object Reference*.

Heckman Selection Models

Under the Heckman selection framework, the dependent variable, y_i, in a linear regression model is only observable for a portion of the data. A classic example, in economics, of the sample selection problem is the wage equation for women, whereby a woman's wage is only observed if she makes the decision to enter the work place, and is unobservable if she does not. The resulting selectivity bias implies that ordinary least squares is no longer an appropriate estimator.

EViews 8 offers two different methods of estimating the Heckman (1979) least squares model with sample selection: Heckman's original two-step method, and maximum likelihood estimation.

To estimate the Heckman Selection Model, open the equation dialog by selecting **Quick/Estimate Equation…** or **Object/New Object…/Equation** in the main EViews menu and selecting **Heckit** from the **Method** combo box. Alternately, you may enter the command `heckit` in the command line.



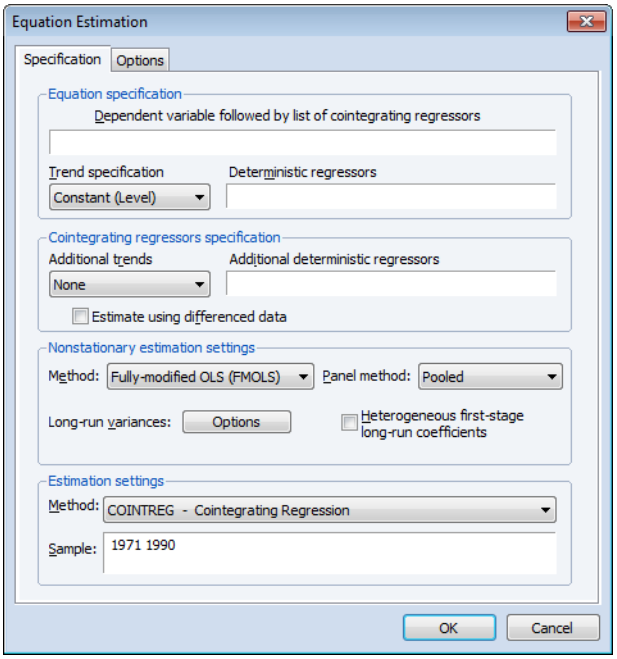
- See "Heckman Selection Model" on page 299 of *User's Guide II* for discussion.
- See also the command line documentation for `Equation::heckit` (p. 94) in the *Object Reference*.

Panel Cointegration Estimation

EViews 8 now offers tools for estimation of single equation panel cointegration estimators. You may estimate your specification using the Fully Modified OLS (FMOLS) panel estimators outlined by Pedroni (2000), or the panel dynamic ordinary least squares (DOLS) estimators described by (Kao and Chiang, 2000; Mark and Sul, 2003).

For both classes of estimators, EViews offers the pooled and weighted forms of the estimators, which combine data across cross-sections, and the grouped estimators, which combine across cross-sections, the estimates obtained for each cross-section.

To estimate an equation using panel cointegration techniques, select **Object/New Object…/Equation** or **Quick/Estimate Equation…** from the main EViews menu, then select **COINTREG - Cointegrating Regression** in the **Method** drop-down menu, or simply type the keyword `cointreg` in the command window. *Note that the workfile must be structured as a panel for the panel options to be present.*



- See Chapter 24. "Panel Cointegration Estimation," beginning on page 797 of *User's Guide II* for discussion.
- See also the command line documentation for `Equation::cointreg` (p. 61) in the *Object Reference*.

User-Defined Optimization

EViews offers a wide variety of built-in estimation methods that involve optimization, including (but not limited to) those supported by the Equation, System, Sspace, and VAR objects.

In addition, the EViews Logl object lets you maximize user-defined likelihood functions. but the Logl object is restricted to computations that can be specified using series expressions, with a log-likelihood objective represented as a series containing log-likelihood contributions for each observation.

In contrast, the new EViews 8 `optimize` command provides tools that allow you to find the optimal parameters or control values of a user-defined function. Notably, `optimize` supports quite general functions so that the computations and the user-defined objective need not be series-based.

- See Chapter 10. "User-Defined Optimization," beginning on page 221 of the *Command and Programming Reference* for discussion and examples.

- See also the documentation for the command `optimize` (p. 379) of the *Command and Programming Reference*.

Multiple Breakpoint Testing

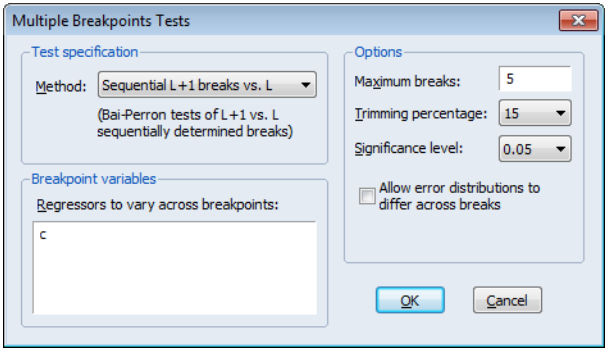
EViews 8 extends the existing Chow and Quandt-Andrews structural break test tools to allow for multiple breakpoint testing (Bai, 1997; Bai and Perron, 1998, 2003). You may now, for a regression model estimated using linear least squares specified by list, ask EViews to test for multiple unknown breakpoints up to a specified maximum.

EViews offers the following test methods:

- Sequential L + 1 breaks vs. L
- Sequential tests all subsets
- Global L breaks vs. none
- L + 1 breaks vs. global L
- Global information criteria

You may test against "pure" breakpoint specifications in which all of the regressors have regime specific coefficients, or specifications in which only some coefficients vary with the regime

To use the EViews tools for testing for multiple breaks, you must use an equation that is specified by list and estimated by least squares.From an estimated equation, bring up the multiple break testing dialog, by clicking on **View/Stability Diagnostics/Multiple Breakpoint Test...**



- See "Multiple Breakpoint Tests" on page 174 of *User's Guide II* for discussion.
- See also Chapter 12. "Least Squares with Breakpoints," on page 369 of *User's Guide II* for related estimation procedures.

- See the command line documentation for `Equation::multibreak` (p. 117) in the *Object Reference*.

Panel Serial Correlation Tests.

For panel equations estimated by GMM, EViews 8 computes the first and second order serial correlation statistics proposed by Arellano and Bond (1991) as one method of testing for serial correlation. The test is actually two separate statistics, one for first order correlation and one for second. If the innovations are *i.i.d.* we expect the first order statistic to be significant (with a negative auto-correlation coefficient), and the second order statistic to be insignificant.

To perform the test click on **View/Residual Diagnostics/Arellano-Bond Serial Correlation Test**. EViews will then calculate the test statistics for both first and second order correlation and display them in a table:

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 02/04/13 Time: 23:58
Sample: 1976 1984
Included observations: 611

Test order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	-2.427825	-2.106427	0.867619	0.0152
AR(2)	-0.332535	-0.075912	0.228281	0.7395

- See "Arellano-Bond Serial Correlation Testing" on page 788 of *User's Guide II* for discussion.
- See `Equation::abtest` (p. 38) in the *Object Reference*.

Panel Causality Tests

EViews 8 extends the existing Granger Causality tests to perform panel data specific testing.

Least squares regressions with panel data can take a number of different forms, depending upon assumptions made about the structure of the panel data. Since Granger Causality is computed by running bivariate regressions, there are a number of different approaches to testing for Granger Causality in a panel context.

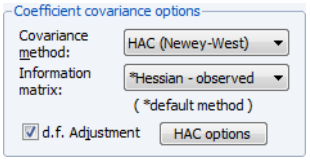
EViews 8 supports two of the simplest approaches to causality testing in panels. The first is to treat the panel data as one large stacked set of data, and then perform the Granger Causality test in the standard way, with the exception of not letting data from one cross-section enter the lagged values of data from the next cross-section. The second approach, the Dumitrescu-Hurlin (2012) approach, makes an extreme opposite assumption; it allows all coefficients to be different across cross-sections.

- See "Panel Causality Testing" on page 836 of *User's Guide II* for discussion.
- See `Group::cause` (p. 258) in the *Object Reference* for command line support.

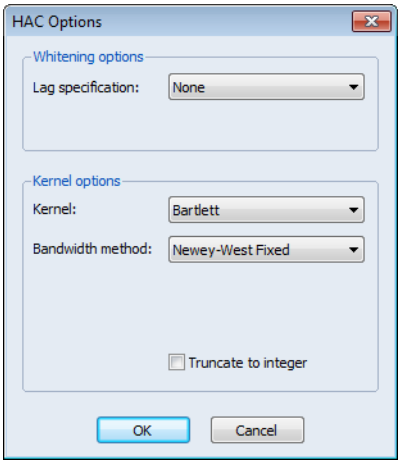
HAC covariances in GLM models

EViews 8 now offers heteroskedasticity and autocorrelation consistent (HAC) covariance computation in equations estimated by GLM.

Simply call up the GLM estimation dialog as before by selecting **Object/New Object.../Equation** or **Quick/Estimate Equation...** from the main menu, or enter the keyword `equation` in the command window. Next select **GLM - Generalized Linear Model** in the **Method** combo box.



The upper right-hand side of the dialog contains the **Coefficient Covariance Options**. To estimate the equation with HAC covariances, simply select **HAC (Newey-West)** in the **Covariance method** drop-down menu. The **HAC options** button which appears provides access to the standard HAC options.

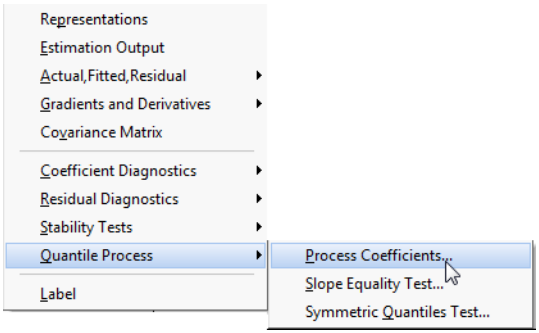


Estimation using HAC covariances is discussed in the EViews 8 manual.

- See "Coefficient Covariance Options," on page 325 of *User's Guide II* for discussion.
- See the command line documentation for `Equation::glm` (p. 82) in the *Object Reference*.

Quantile Regression Process Subsets

EViews 8 offers enhanced quantile regression process computation display and testing. Previously, display of quantile process graphs and tables, and symmetry and slope testing was performed on all coefficients. This made it difficult to construct output focusing on the stability of particular coefficients, or to test only a subset of the possible coefficient restrictions.



You may now specify specific coefficients to display and test in these quantile process views.

See the updated command entries for:

- `Equation::qrprocess` (p. 126).
- `Equation::qrslope` (p. 128).
- `Equation::qrsymm` (p. 129).

ARMA Specification by Range

ARMA terms in equations may now be specified using ranges defined by the keyword `to`. Previously, to allow for AR terms from 1 to 4, you would have had to enter the terms individually, as in

```
equation eq1.ls y c ar(1) ar(2) ar(3) ar(4)
```

Similarly, a moving average with non-zero coefficients on both the first and second lagged errors was specified as

```
equation eq2.ls y c ma(1) ma(2)
```

The EViews method of specifying individual terms allowed for considerable flexibility in your ARMA specification, but was burdensome in the common case where there are no restrictions on the AR or MA coefficients and you wish to include several terms.

We have extended the ARMA syntax so that EViews 8 now supports specifying your AR and MA terms. The previous two equations may now be specified as:

```
equation eq1.ls y c ar(1 to 4)
```

```
equation eq2.ls y c ma(1 to 5)
```

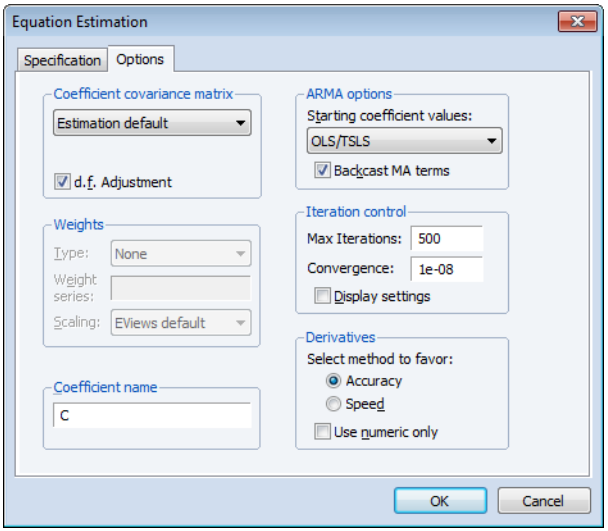
Note that this syntax is similar to that supported for specifying lags of variables.

User-Specified Default Coefficients

Equation estimators that are specified by list now support user-specified coefficients.

Previously, estimation of an equation specified by list almost always required use of the C coefficient vector in the workfile. Unfortunately, C is limited to 751 entries so that in the rare settings where one wanted to estimate models with a greater number of coefficients, the only solution was to specify the equation by expression.

You may now use the **Coefficient name** option to specify an alternate coefficient to use in estimation of an equation specified by list. For example, the least squares dialog is depicted below, with the option set to use the default "C":



If the specified coefficient does not exist it will be created; if it is too small, it will be resized. If it exists in the workfile but is of another object type, the estimation procedure will error.

The "coef = " option may be added to the options entries for all relevant single equation estimators:

coef = *arg* *(default* = "c")	Coefficient name to use in estimation.

Robust Wald F-statistics

EViews 8 now reports the robust Wald test of the null hypothesis that all non-intercept coefficients are zero in cases where you specify a robust coefficient covariance method.

Previously, EViews only reported the residual based F-statistic for testing the null hypothesis. This F-statistic statistic depends only on the coefficient point estimates, and not their standard errors, and was valid only under the maintained hypotheses of no heteroskedasticity or serial correlation. For ordinary least squares without conventionally estimated standard errors, this statistic is numerically identical to the Wald statistic for the hypothesis that all non-intercept coefficients are equal to zero. However, the numerical equivalence between the two test statistics breaks down if robust standard errors are employed.

For equations estimated with robust standard errors EViews now reports both the original F-statistic and associated probability and the Wald test statistic and probability. EViews reports this statistic on equation output as the **Wald F-statistic**, and the corresponding p-value as **Prob(Wald F-statistic)**.

In addition, you may obtain these values from an equation using the `@robf` and `@robfprob` data members, as in

```
scalar wstat = eq1.@robf
scalar wprob = eq1.@robfprob
```

where EQ1 is the estimated equation.

Programming Support

Programming in EViews 8 has been improved in a number of important ways.

User-Defined Objects

User-defined objects are an exciting new feature in EViews 8. A EViews user object allows you to create your own object types inside of EViews. A user object may be as simple as a storage container for other EViews objects, or it may be a sophisticated new estimation object defined by multiple EViews programs, with views containing post-estimation tests and results, and procedures producing output from the estimation results. Once defined, a user object is almost indistinguishable from a built-in EViews object.

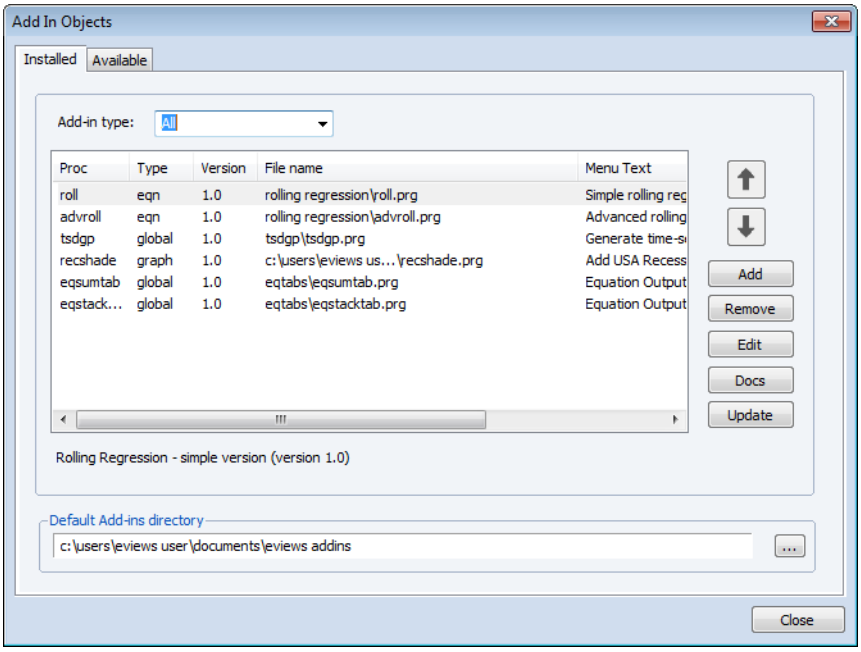
Defining a user object is quite easy—simply specify the types of data and objects stored inside your object, and if desired, define a set of views and procedures that be accessed via commands, menus and dialogs.

Even if you do not go to the trouble of creating your own objects, you may take advantage of this powerful tool by using user objects downloaded from the IHS EViews website or obtained from third-parties.

- See Chapter 9. "User Objects," beginning on page 195 of *Command and Programming Reference* for extensive discussion.
- See the command line documentation for `adduo` (p. 272) in the *Command and Programming Reference*.

Add-Ins Management

EViews 8 offers an improved environment for managing and working with Add-ins. Among other things, EViews now allows Add-ins to have a version number, and the **Manage Add-ins** dialog offers users Add-in the ability to update to the latest version of the Add-in simply by clicking on a button:



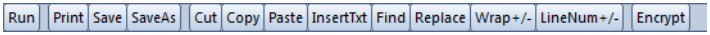
- See Chapter 8. "Add-ins," beginning on page 169 of *Command and Programming Reference* for extensive discussion.
- See the command line documentation for `addin` (p. 270) in the *Command and Programming Reference*.

Program Editor & Execution Enhancements

EViews 8 features two important enhancements to the program editor; program line numbers, and the ability to selectively run parts of a program.

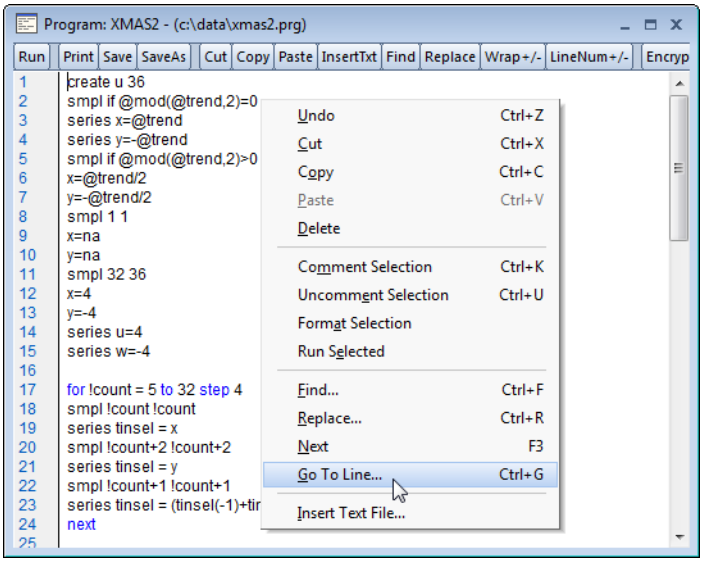
Line numbers

EViews programs now allow you to view line numbers in the program. To enable line numbers in a program press the **LineNum +/-** button on the program tool bar (you may have to widen the program window to see the toggle):



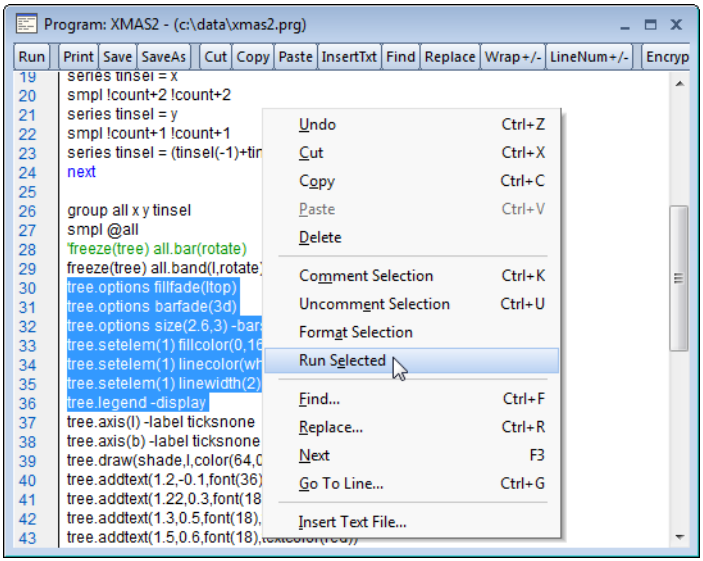
Note that line numbering can only be enabled if word wrap is switched off (you can use the **Wrap +/-** button to turn it off).

You may right click anywhere in your program and select **Go To Line...** to jump directly to a specific line number.



Selective Run

You may choose to only run part of your program by highlight the lines you wish to run, then right-clicking and selecting **Run Selected**. EViews will then execute only the selected line of code as a new program.



- See "Running Part of a Program" on page 111 of *Command and Programming Reference* for extensive discussion.

Series Generating Functions

EViews 8 incudes a variety of new functions for generating values as part of a series expression.

Event Functions

These functions return information about each observation's relationship with a specified date, or date range.

Function	Description
`@before`(*arg1*)	Creates a dummy variable equal to 1 if the observation is before the date given by *arg1*. *arg1* should be enclosed in quotes.
`@after`(*arg1*)	Creates a dummy variable equal to 1 if the observation is after or on the date given by *arg1*. *arg1* should be enclosed in quotes.
`@during`(*arg1*)	Creates a dummy variable equal to 1 if the observation lies between the dates given by the date pair contained in *arg1*, and 0 otherwise. *arg1* should be given in quotes.

`@event`(*arg1[, basis]*)	Proportion of a one-off event that lies in each observation.
`@holiday`(*arg1[, basis]*)	Proportion of an annual event that lies in each observation.

See "Event Functions," on page 553 in the *Command and Programming Reference* for discussion.

Indicator Functions

These functions produce indicators for whether each observation satisfies a specific condition:

Function	Description
`@inlist`(*series*, *"list"*)	Creates a dummy variable equal to 1 for observations where *series* is equal to one of the values specified in *list*, and 0 otherwise. *list* should be a quoted, space delimited list of values. This function works on both numerical and alpha series.
`@between`(*series, val1, val2*)	Creates a dummy variable equal to 1 for observations where *series* is greater than or equal to *val1* and less than or equal to *val2*.

See "Indicator Functions," on page 555 in the *Command and Programming Reference* for discussion.

By-Group Statistics Functions

These functions return values corresponding to the group associated with each observation:

Function	Description
`@firstsby`(*arg1*, *arg2[, s]*)	First non-missing value in *arg1* for each *arg2* group.
`@lastsby`(*arg1*, *arg2[, s]*)	Last non-missing value in *arg1* for each *arg2* group.

See "By-Group Statistics," on page 520 in the *Command and Programming Reference* for discussion of related by-group statistics.

Matrix Language Tools

We have improved the support for matrices in EViews 8, making it easier to work with matrices, in particular to extract information from matrices and to perform common operations:

- Matrix objects now have a number of data members that return information about the matrix, including the number of rows or columns, or return useful transformations,

such as the transpose, the diagonal elements, or sub-elements of the matrix. See the new "Matrix Data Members" on page 55.

- There is a new set of vector procs, `Vector::setglobalc` (p. 792) and `Vector::setglobalc` (p. 792) in the *Command and Programming Reference* that allow you to copy the values currently in the workfile C vector into or out of the vector.
- You may now specify your own column and row headings for matrix objects (rather than the default C1, C2..., or R1, R2...). The `Matrix::setcollabels` (p. 361) and `Matrix::setrowlabels` (p. 364), procedures allow you to change the headings via command.

Matrix Functions

EViews 8 includes a number of new matrix algebra and matrix utility functions, including functions for horizontal and vertical concatenation, quadratic form calculation, and a new easy function to fill a matrix object with values (all in the *Command and Programming Reference*):

@fill ..... create and fill a vector with a list of values (p. 623).
@hcat ..... horizontally concatenate two matrix objects (p. 626).
@qform..... compute a quadratic form of a symmetric matrix and a matrix or vector (p. 636).
@uniquevals ..... returns a vector or svector containing the list of unique values in the object (series, vector, alpha, matrix) (p. 645).
@vcat ..... vertically concatenate two matrix objects (p. 646).

Workfile Support

A number of new options are available in the workfile creation, opening and saving commands.

- `wfcreate` (p. 467) (in the *Command and Programming Reference*) has new alignment options that allow you to specify the starting day for weekly or biweekly workfiles, or the starting month for quarterly, semi-annual or annual workfiles.
- `wfopen` (p. 472), `pageload` (p. 400) and `import` (p. 359) (in the *Command and Programming Reference*) have a new option (*byrow*) for opening transposed data in raw format files (ascii, Excel, etc...). There is also a new option for specifying the data type of each series being opened/imported (*types* =).
- The `wfsave` (p. 485) and `pagesave` (p. 402) commands (in the *Command and Programming Reference*) have a new option (*mode* =) to allow you to modify an existing Excel file (without wiping existing data in the file), and one to save the file in transposed format (*byrow*).

- The wfclose (p. 464) command (in the *Command and Programming Reference*) now allows you optionally to optionally provide the name of a workfile if you do not wish to close the active workfile.

Workfile Functions

In addition, you may use the following new function to obtain information about the open workfile.

Function	Name	Description
@pagelist	list of workfile pages	returns a string containing a space delimited list of the page names in the current workfile.

Table Support

Program support for tables and table creation have been enhanced in EViews 8.

- You may use the Table::setprefix (p. 712) and Table::setsuffix (p. 713) (in the *Object Reference*) table procs prefixes and/or suffixes to selected cells in tables.
- Tables may now be saved as Enhanced Metafiles or PDF files. See Table::save (p. 698) in the *Object Reference*).
- Tables and selected table views may be copy-and-pasted as OLE links into documents in other applications such as Microsoft Word, Excel, or PowerPoint. These OLE links allow you to double click on the linked table in the other application to open EViews for additional customization, and to automatically update the table link when the table or table view changes in your EViews workfile. See "Object Linking and Embedding (OLE)" on page 27.
- Dated data table creation tools have been expanded and full programming language support is now offered for the customization. See "Dated Data Table Support" on page 20.

General Information Tools

EViews 8 offers additional tools for managing your EViews global options settings.

- You may use the optsave (p. 384) (in the *Command and Programming Reference*) command to save the current EViews global options settings ".INI" files into a directory. You may distribute these files to other users with whom you wish to share settings.
- The optset (p. 385) (in the *Command and Programming Reference*) command replaces the current EViews global options settings ".INI" files with saved options.

General Functions

In addition, you may use the following new function to obtain information about your EViews application environment (all in the *Command and Programming Reference*):

@env ..... returns a string containing the value of a Windows environment (p. 656).

@folderexist ..... check for a folder's existence on disk (p. 658).

@wquery ..... returns a string list of object attributes for all objects in the database that satisfy the query (p. 680).

@wread ..... returns a string containing the contents of the specified text file on disk. (p. 681).

Object Data Members

EViews 8 offers an expanded set of object data members that provide access to information about the object.

Some new members, such as `@attr("arg")`, are common to all objects. Others, such as the ones listed below, are object specific:

All Object Data Members

String values

@attr("*arg*") ..... string containing the value of the *arg* attribute, where the argument is specified as a quoted string.

Equation Data Members

Scalar Values

@ncross ..... number of cross sections included in a panel equation.

@robf ..... robust F statistic.

@robfprob ..... probability value of the robust F statistic.

@npers ..... number of periods included in a panel equation.

@nregimes ..... number of regimes in a switching regression.

@pval(i) ..... *i*-th coefficient p-value

Vectors and Matrices

@cointcov ..... symmetric matrix containing the contemporaneous covariance for cointegrating regression equations.

@initprobs ..... matrix containing initial probabilities for switching regression equations.

@lambda2cov ..... symmetric matrix containing the portion of one-sided long run variances for cointegrating regression equations.

@pvals ..... vector containing the coefficient probability values.

String Values

@coeflabels.....coefficient labels used in regression output table.

Matrix Data Members

Scalar values

@rows .....number of rows in the matrix.

@cols .....number of columns.

Matrix values

@col(i) .....The i-th column of the matrix. i may be a vector of integers, in which case multiple columns are returned (as a matrix).

@diag.....vector containing the diagonal elements of the matrix.

@dropcol(i) .....Returns the matrix with the i-th column removed. i may be a vector of integers, in which case multiple columns are removed.

@droprow(i) .....Returns the matrix with the i-th row removed. i may be a vector of integers, in which case multiple rows are removed.

@row(j).....The j-th row of the matrix. j may be a vector of integers, in which case multiple rows are returned (as a matrix).

@sub(i,j) .....The (i,j)-th element of the matrix. Both i and j may be vectors of integers, in which case multiple elements are returned (as a matrix).

@t .....transpose of the matrix.

Model Data Members

String values

@linklist.....string containing space delimited list of all linked objects in the model

@spec("variable") .string containing the equation specification for the specified endogenous variable.

Rowvector Data Members

Scalar values

@cols .....number of columns in the matrix.

Vector values

@dropcol(i) .....Returns the rowvector with the i-th row removed. i may be a vector of integers, in which case multiple rows are removed.

Table Data Members

Scalar values

@cols .....number of columns in the table.

Vector Data Members

Scalar values

@rows ..... number of rows in the matrix.

Vector values

@droprow(i) ..... Returns the vector with the i-th row removed. i may be a vector of integers, in which case multiple rows are removed.

Updated Command and Object List

Commands

addin ..... register a program file as an EViews Add-in.

adduo..... register an EViews User Object class.

breakls ..... least squares with breakpoints and breakpoint determination.

close ..... close object, program, or workfile *(new features)*.

cointreg..... cointegrating regression using FMOLS, CCR, or DOLS, or panel FMOLS or DOLS *(new support for panel estimation)*.

dbopen..... open a database.

glm ..... estimate a Generalized Linear Model (GLM) *(new HAC covariance support)*.

heckit..... estimate a selection equation using the Heckman ML or 2-step method.

optimize..... find the solution to a user-defined optimization problem.

optsave..... save the current EViews global options settings ".INI" files into a directory.

optset ..... replace the current EViews global options settings ".INI" files with ones based in a different directory.

pageload..... load one or more pages into a workfile from a workfile or a foreign data source *(new features)*.

pagesave..... save the active page in the default workfile as an EViews workfile or as a foreign data source.

robustls ..... robust regression (M-estimation, S-estimation and MM-estimation).

switchreg ..... exogenous and Markov switching regression.

userobj ..... declare an empty, unregistered user object.

wfclose..... closes the active workfile *(new features)*.

wfcreate ..... create a new workfile *(new features)*.

wfopen..... reads in a previously saved workfile from disk, or reads the contents of a foreign data source into a new workfile *(new features)*.

wfsave..... save workfile to disk as a workfile or a foreign data source.

All Objects

Object Procs

olepush.....push updates to OLE linked objects in open applications.

setattr .....set the value of an object attribute.

Equations

Equation Methods

breakls..... least squares with breakpoints and breakpoint determination.

cointreg.....cointegrating regression using FMOLS, CCR, or DOLS, or panel FMOLS or DOLS *(with new support for panel estimation)*.

glm .....Generalized Linear Models (GLM) *(with new HAC covariance support)*.

heckit .....estimate a selection equation using the Heckman ML or 2-step method.

robustls.....robust regression (M-estimation, S-estimation and MM-estimation).

switchreg .....exogenous and Markov switching regression.

Equation Views

abtest.....test for serial correlation in a panel GMM equation using the Arellano-Bond test.

breakspec.....display the breakpoint specification for an equation estimated by least squares with breakpoints.

multibreak .....perform multiple breakpoint testing for an equation specified by list and estimated by least squares.

qrprocess .....display table or graph of quantile process estimates *(with new features)*.

qrslope.....test of equality of slope coefficients across multiple quantile regression estimates *(with new features)*.

qrsymm .....test of coefficients using symmetric quantiles *(with new features)*.

rgmprobs .....display the regime probabilities in a switching regression equation.

transprobs.....display the state transition probabilities in a switching regression equation.

Equation Procs

makergmprobs .....save the regime probabilities in a switching regression equation.

maketransprobs.....save the state transition probabilities in a switching regression equation.

Graphs

Graph Procs

addarrow .....draw a line or arrow on a graph.

options ..... change the option settings of the graph *(with new features)*.
save ..... save graph to a graphics file *(with new PDF save)*.
setfont ..... set the font for the text in a graph.

Groups

Group Views

cause ..... pairwise Granger causality tests *(with new support for testing in panel workfiles)*.
sheet ..... spreadsheet view of the series in the group *(with new features)*.

Group Procs

ddrowopts ..... set the individual row options for the dated data table view of the series in a group.
ddtabopts ..... set the table default options for the dated data table view of the series in a group.

Matrices

Matrix Procs

setcollabels ..... set the column headers in a matrix object spreadsheet.
setrowlabels ..... set the row headers in a matrix object spreadsheet.

Models

Model Views

compare ..... produce a table showing the differences between scenarios for the specified series.

Model Procs

adjust ..... prepare a variable for editing in the current scenario and/or update its values using an array expression.
drop ..... drop equations for one or more endogenous variables in the model.
droplink ..... drop linked objects from the model.
exclude ..... specifies (or merges) excluded endogenous variables in the active scenario *(new features)*.
makegraph ..... make graph object showing model series *(with new features)*.
makegroup ..... make group out of model series and display dated data table *(with new features)*.
override ..... specifies (or merges) override series to the active scenario *(with new features)*.
reinclude ..... removes one or more variables from the excluded variable list.
replace ..... replace the text specification for an endogenous variable in the model with a new specification.

replacelink .....replace a linked object with a different linked object.
replacevar .....replace all instances of a variable in the text specification of a model with a different variable.
revert .....reverts one or more overridden variables in the active model scenario back to their baseline values.

Series

Series Views

pancov .....compute covariances, correlations, and other measures of association for a panel series.
panpcomp .....perform principal components analysis on a panel series.
sheet .....spreadsheet view of the series *(with new features)*.

Series Procs

adjust.....modify or fill in the values in a series.
ets .....perform Error-Trend-Season (ETS) estimation and exponential smoothing.
makepanpcomp .....save the scores from a principal components analysis of a panel series.
x13 .....seasonally adjust series using the Census X-13ARIMA-SEATS method.

Spools

Spool Procs

save .....save spool object to disk as a CSV, tab-delimited ASCII text, RTF, or PDF file *(with new PDF save)*.

Tables

Table Procs

save .....save table object to disk as a CSV, tab-delimited ASCII text, RTF, HTML, or PDF file *(with new PDF save)*.
setprefix.....set the cell prefix string for the specified table cells.
setsuffix .....set the cell suffix string for the specified table cells.

User Objects

User Object Declaration

userobj.....declare an empty, unregistered user object.

User Object Views

display .....display table, graph, or spool output in the user object window.
label .....display or change the label view of a user object.

members ..... display a list of the members of a user object.

User Object Procs

add ..... add a data or object member to the user object.
clear ..... remove all members from the user object.
displayname ..... attach a display name to the user object.
drop ..... drop a data or object member from the user object.
extract ..... display or copy a data member from the user object.
label ..... display or change the label view of a user object.

VAR

Var Methods

bvar ..... estimate a Bayesian VAR specification.

Vector

Vector Procs

getglobalc ..... copy the contents of the workfile C coefficient vector into the vector object.
setglobalc ..... copy the contents of the vector object into the workfile C coefficient vector.

Updated Function List

Matrix and Vector Functions

@fill ..... create and fill a vector with a list of values.
@hcat ..... horizontally concatenate two matrix objects.
@qform ..... compute a quadratic form of a symmetric matrix and a matrix or vector.
@uniquevals ..... returns a vector or svector containing the list of unique values in the object (series, vector, alpha, matrix).
@vcat ..... vertically concatenate two matrix objects.

Program Support

@env ..... returns a string containing the value of a Windows environment.
@folderexist ..... check for a folder's existence on disk.
@wquery ..... returns a string list of object attributes for all objects in the database that satisfy the query.
@wread ..... returns a string containing the contents of the specified text file on disk.

Other

- See "Object Data Members" on page 54.

EViews 8 Compatibility Notes

The following discussion describes EViews 8 compatibility issues for users of earlier versions.

Workfile Compatibility

With few exceptions, EViews 8 workfiles are backward compatible with EViews 7. Note that the following objects are new or have been modified in Version 8:

- Equation objects estimated with methods that employ new features (breakpoint estimation, robust estimation, Heckman selection, panel cointegration, switching regression, GLM with HAC robust standard errors, Bayesian VARs.)

If you have saved workfiles containing any of the above objects and open them in EViews 7 or earlier, EViews will delete the incompatible object and notify you that one or more objects were not read. If you then save the workfile, you will lose the objects. We recommend that you make a copy of any workfiles that contain these objects if you would like to use these workfiles in earlier versions of EViews.