RATS Version 6.01

WinRATS Version 6.01 is now available. This update adds several new features, and includes fixes for several bugs present in 6.0.

Licensed WinRATS 6.0 users can download a free update from our website (see **www.estima.com/ patches.shtml**). If you'd prefer not to download the patch, you can also order an update on CD for $15. The CD includes the new program plus new and updated procedures.

If you haven't yet updated to v6, updating now will give you all the major improvements described in the last newsletter, plus the 6.01 additions. For most users, the update cost will be $150. See page 3 for details.

You can order using our website, or by phone, fax, mail, or e-mail. Please include your full name, address, and current RATS serial number and method of payment with your order. If you're interested in keeping current with RATS automatically during the coming years, check out the story about maintenance contracts on page 2.

Bug Fixes

Most of the bug fixes in 6.01 are fairly minor. However, one issue related to the new "Undo" features in the editor can lead to crashes while editing text. Because the chances of running into this problem are fairly high, we would definitely recommend that anyone using RATS 6.0 update to 6.01. For more on the bug fixes, see: **www.estima.com/bugs.shtml**

New Features

The new features in 6.01 include:

QZ Instruction: The new instruction **QZ** does a QZ decomposition, used in the calculation of generalized eigenvalues (solutions to $|\mathbf{A} - \lambda\mathbf{B}| = 0$ for general matrices **A** and **B**). See page 4 for details.

New Functions: We have added several new functions. See page 4.

Linear and Quadratic Programming:
The `LQPROG` instruction can now handle constraints of the form $\mathbf{Ax} \geq \mathbf{b}$, as well as the $\mathbf{Ax} \leq \mathbf{b}$ constraints supported previously. See page 4.

X11 Wizard: We have added a *Wizard* interface for the X11 seasonal adjustment operation in the Professional version of WinRATS. Like the other *Wizards*, this provides a simple dialog-box interface to the `X11` instruction.

RATS 6 for UNIX

The UNIX version of RATS 6 is now shipping. For complete details on Version 6, please see the March 2004 edition of our newsletter, available on our website at **www.estima.com/newsindx.shtml**.

Some highlights include: New instructions for estimating ARCH/GARCH models, discrete dependent variable models, and limited dependent variable models, and for doing non-parametric regressions and recursive least squares; support for contour graphs; a simplified command for univariate forecasts; dozens of new functions; and much more.

This release also includes the new features and bug fixes described in the "RATS Version 6.01" story at left (excluding the X11 Wizard, as the *Wizards* are only available in WinRATS and MacRATS).

UNIX RATS is available for virtually any UNIX-based system, as well as PCs running Linux, and Macintosh systems running Mac OS X. For most platforms, we supply source code which you compile on your system. This is usually just a matter of activating the appropriate lines in the "makefile" we supply.

For Linux and Mac OS X users, we offer the option of receiving the pre-compiled executable version, or source code which you can compile yourself.

Note that UNIX RATS is primarily a batch-mode only application. You can enter commands interactively at a command prompt, but there is no text-editor based interface like the ones found in WinRATS and MacRATS. Most users construct their programs using their favorite text editor, and then run the job in batch mode.

See page 3 for pricing on new licenses and updates, or contact us if you would like more information.

Contents

Maintenance Contracts

We're again offering "maintenance contracts" for those who wish to receive their updates to RATS automatically. For single-user licenses that have already been updated to version 6 the cost is $200 for the standard version or $250 for the Pro (plus a shipping charge for those outside the continental U.S.). This provides all updates up to and including Version 7. You can obtain information about ordering this on the web site.

Need to Budget on an Annual Basis?

We've heard from quite a few of our customers at larger institutions that they would prefer to have maintenance contracts priced on an annual basis, as they would find that easier for budgetary purposes. If you have a network license or large groupings of single licenses that you would like to keep up-to-date, please contact us for pricing.

Classroom RATS

For many years, we've offered a "classroom" version of RATS at a fraction of the price of a full version. To allow us to do this, we have to limit the product in some way. It would be counter to our general philosophy to provide only a subset of the econometric capabilities, so, in the past, we've provided a program compiled right alongside our other releases, but with a limit to a total of 6,000 total data points (series x observations).

However, econometrics textbooks (even some introductory books) have increasingly turned to "real world" examples with thousands of observations; such data sets can't be handled within that 6,000 data point limit. To better accommodate this trend, we'll be experimenting with an alternative method of limiting the classroom version—it will have full capacity but will function only for a set length of time.

If your school has an up-to-date network license, you will be able to obtain these (for student use only) for $20 each without the full documentation set (it will come with the *Getting Started* book only) and $60 each with a full set of documentation. We will sell these in quantities of five or more.

We also continue to offer $200 discounts on the full, unrestricted versions of RATS for full-time students. To qualify for the discount, students need to provide written verification of their student status by fax or mail. Acceptable forms of verification include a copy of a current registration receipt, or a letter from a faculty member or department confirming that the student is currently enrolled.

Web Site Updates

More Textbook Examples

We've added two new books to our collection for which worked examples are provided. Wooldridge's *Introductory Econometrics: A Modern Approach, 2nd edition* (Thomson–South–Western, 2003) and Stock and Watson's *Introduction to Econometrics* (Addison-Wesley, 2003) are two of the more popular introductory econometrics texts. For links to these examples, see: **www.estima.com/textbookindex.shtml**

New Procedures

The popular programs written by Peter Pedroni for panel data unit root and cointegration tests, and fully modified least squares in heterogeneous panels have been updated by the author and converted into procedures, which makes them much easier to use. You'll find these in the files PANCOINT.SRC and PANELFM.SRC.

We've updated the ERSTEST procedure for the Elliott–Rothenberg–Stock test for unit roots. This includes the sub-procedure ERSDETREND which can be called to just do the GLS detrending of the data.

ADFAutoSelect is largely based upon a procedure within Norman Morin's URADF for choosing a lag length for an ADF test, but has been updated to use Version 6 features and includes some additional options for selecting the lag length.

%PSDINITCX is a new user-defined function for computing the ergodic variance of a state space model using the method described by Soren Johansen in the September 2002 edition of *Econometrica*. This is a more efficient alternative to the built-in %PSDINIT function when there are 6 or more states.

We've also cleaned up some of the code on many of the other existing procedures. In particular, we've tried to make sure that, where appropriate, variables are defined as LOCAL to the procedure, to avoid variable-name conflicts.

Technical Reports

We've added a new "Technical Reports and Papers" section to our website, which we will use to post articles on technical aspects of RATS and related econometric issues.

The first article posted is "New Developments in VAR's" by Tom Doan. In addition to the paper itself, you can download sample programs and data files.

Over the coming months and years, we'll be adding more articles that we hope will be of interest. We will also consider posting articles (or links to articles) written by other RATS users. So, if you've written something about RATS or its application to an econometrics problem that you think might be of interest to the RATS community, please let us know.

Windows, UNIX, Linux, and UNIX on Mac OS X Prices

The charts below provide prices for new licenses and updates to existing licenses for the Windows and UNIX/Linux/Mac OS X UNIX versions of RATS.

WinRATS Prices

Updates and Upgrades

The basic price to update to WinRATS 6.0 from any earlier Windows or DOS version is $150. For an extra $150, you can upgrade to the Professional version, which adds X11 seasonal adjustment and the ability to read and write FAME format data files.

	To Version 6 of:	
Update From:	WinRATS	WinRATS Pro
WinRATS Professional	—	$150
WinRATS (any other)	$150	$300
RATS386 (any)	$150	$300

Be sure to include your current serial number with an update orders. If you cannot find your serial number, please contact us at *sales@estima.com* or 800-822-8038 before placing your order. Please provide your full name and address, and any information on when and where you purchased RATS.

New Licenses

Product	First Copy	Addl. Copies
WinRATS Professional	$650	$500
WinRATS	$500	$350

Illinois residents add 8.75% sales tax. Shipping is included for destinations in the contiguous U.S. Add $30 for Alaska, Hawaii, and Canada. Add $50 for other destinations, including U.S. possessions.

Please contact Estima for pricing on multi-user WinRATS licenses.

UNIX, Linux, and UNIX for Mac OS X Prices

Multi-User Licenses

These prices are for an unlimited user license installed on a single UNIX or Linux server. All users must be affiliated with the organization or institution:

Type of Institution	Update to 6	New License
Academic	$600	$2000
Govt./Non-profit	$900	$3000
Commercial	$1200	$4000

Single-User Licenses

These prices are for an installation on single-user UNIX, Linux, or Mac OS X workstations:

Platform	Update	New License
UNIX (source code)	$210	$700
Linux (executable)	$180	$600
Linux (plus source)	$210	$700
Mac OS X (executable)	$180	$600
Mac OS X (plus source)	$210	$700

Illinois residents add 8.75% sales tax.

Ground shipping is included to anywhere in the contiguous U.S. For Alaska, Hawaii, and Canada, add $30 per copy for single-user licenses, or $40 plus $5 for each additional set of manuals for multi-user licenses. For all other destinations, including U.S. possessions, add $50 per copy for a single-user license, or add $75 plus $10 per additional manual for multi-user licenses.

Haver Economics and OECD Main Economic Indicators Databases

This is a reminder that Estima offers two sources of economic databases—the OECD Main Economic Indicators database for international economic data, and Haver Analytics USECON, USNA, and US1 databases for U.S. data.

The OECD MEI provides data for all member countries and several of the most significant non-member countries. The data is supplied on CD ROM in the form of RATS format data files (one file per country). A "G7" subset of the database is also available, which includes data only for the original G7 countries. You can purchase a one-year subscription with monthly or quarterly updates, or you can order a single copy of the database.

The Haver Analytics databases provide detailed economic data for the U.S. USECON includes approximately 12,000 data series, including national accounts, prices, industrial production, money supply, etc. The USNA database adds an additional 20,000 series with complete national income and product accounts data from the Bureau of Economic Analysis. These series provide detailed information such as monthly personal consumption expenditures and personal income. The US1 database is a subset of the USECON database, containing approximately 750 of the most commonly-used data series.

The Haver data are supplied on CD ROM both in RATS format, and in Haver's DLX (Data Link Express) format. The databases are offered as a one-year subscription. Commercial institutions will receive updates every month. Academic institutions have the option of getting monthly updates, quarterly updates, or of purchasing just a single copy of the database (the "Annual" subscription).

For more information or to place an order, please visit our website or contact us.

New QZ Instruction

QZ is a new instruction which does a QZ or generalized Schur decomposition of a pair of (real) matrices **A** and **B**. As a side effect, it computes the generalized eigenvalues of the pair, that is, the solutions of $|\mathbf{A} - \lambda\mathbf{B}| = 0$.

QZ is a key step in the method for solving linear (or linearized) rational expectations models described by Sims in "Solving Linear Rational Expectations Models", *Journal of Computational Economics*, 2001. One critical difference is that the QZ instruction in RATS computes the generalized *real* Schur decomposition.

This generates a collection of matrices such that $\mathbf{Q}\Lambda\mathbf{Z}' = \mathbf{A}$ and $\mathbf{Q}\Omega\mathbf{Z}' = \mathbf{B}$, where **Q** and **Z** are orthogonal matrices $(\mathbf{QQ}' = \mathbf{ZZ}' = \mathbf{I})$, Ω is upper triangular and Λ is block upper triangular, where the blocks on the diagonal are 1×1 for real generalized eigenvalues and 2×2 for complex conjugate pairs.

The methods used in Sims' paper are based upon the complex Schur decomposition, where both Ω and Λ are upper triangular, but all four of the matrices can be complex–valued. Sims' solution procedure requires only an ability to create block triangular matrices with blocking based upon absolute values of the generalized eigenvalues, which the real matrices will satisfy, since the 2×2 blocks on the diagonal are only for pairs with the same absolute value.

Linear and Quadratic Programming Improvements

Previously, the LQPROG instruction in RATS could only handle constraints of the form:

$$\mathbf{Ax} \le \mathbf{b}, \text{ with } \mathbf{b} \ge 0$$

with some possibly holding with equality. Handling constraints which are naturally written $\mathbf{Ax} \ge \mathbf{b}$ required use of auxiliary variables. Version 6.01 adds the option GE= *# of constraints of form* $\mathbf{Ax} \ge \mathbf{b}$. In constructing **A** and **b**, any constraints which hold with equality are listed first (and their number is supplied via the EQUALITIES option), $\mathbf{Ax} \le \mathbf{b}$ constraints come next, and the $\mathbf{Ax} \ge \mathbf{b}$ constraints are listed last.

In addition to the new GE option, we've also added options A, B, C (which supply the linear combination determining the objective function) and Q (the Hessian matrix for quadratic programming), as an alternative to using parameters to supply this information. We find it easier to use the options than try to remember the proper order for the parameters.

New Functions in 6.01

Version 6.01 includes several new functions:

%INDEX(v) returns a VECTOR[INTEGER] which gives a sorting index into the VECTOR v—that is, the vector of integers so that V(%INDEX(V)) would have V sorted into increasing order.

%SORTC(A,c) returns a copy of the array A sorted based upon the values of column c. By default, the data are sorted in ascending order, but if you use a negative column number, it will sort in descending order. For example, using "–2" for c would sort A on the values in column 2 in descending order.

%SORTCL(A,l) returns a copy of the array A sorted based upon the values of the listed columns. The first listed column is the primary key, followed by the second, etc.

%LOGTDENSITY(V,u,nu) returns the log of the multivariate *t* density with nu degrees of freedom with covariance matrix V and deviation from the mean of u.

RATS User's Group Meetings

Trinity College in Dublin hosted a User's Group meeting on April 22, organized by Brian Lucey. We had about 25 attendees from a half-dozen countries. John Frain from the Central Bank of Ireland made two presentations: one about the use of the RATS file format in the Central Bank, the other on his RATS procedure for Chow-Lin interpolation. A link to the latter can be found on the Estima web site. On the new "technical documents" page on the web site, you can find "New Developments in VARs", a paper and set of programs presented by Tom Doan of Estima. Valerio Poti from TCD presented a paper on multivariate GARCH models.

If anyone is interested in hosting a future User's Group meeting, let us know so we can put information on the web site and in the newsletter.

In-House RATS Training

You can now arrange for specialized RATS training at your site. Whether you want an introductory course, or have advanced topics that you'd like covered, the program can be adjusted to meet your needs. Please contact us if you're interested.