Version 5 for Mac, UNIX, and Linux

Version 5 of RATS is now available for Macintosh, UNIX, and Linux systems, as well as Windows and DOS platforms. As detailed in our last newsletter, Version 5 adds new instructions for estimating state space models, working with structural VAR's and error correction models, handling panel data regressions, and computing empirical density functions.

Other major improvements include:

- expanded support for non-linear estimation, including constrained optimization, additional optimization methods and more flexible specification of parameter sets.

- a variety of new functions, for everything from creating new series on the fly, to embedding loops inside expressions, to concatenating matrices, and more.

- revised manuals, now formatted into two separate 7"x9" books, with more examples and technical details, and expanded/new coverage of topics such as Structural (identified, Bernanke-Sims) VAR's, Markov switching models, hazard models, state space models, and simulations.

If you didn't update to 4.3, you will also see the instructions added then: **NNLEARN** and **NNTEST** for neural networks and **LQPROG** for linear and quadratic programming.

Pricing for New Licenses and Update/Upgrades

The table below lists prices for our Windows, DOS, and Mac products. *WinRATS-32* is our fast 32-bit Windows application, recommend for most Windows users. *WinRATS–16* is a slower 16-bit version for the budget-minded. *RATS386* is a 32-bit DOS version. *MacRATS PPC* is the Macintosh Power-PC version. The older *MacRATS '020* and *MacRATS* products have been discontinued.

"New" prices are for a new, single-user license. If you already have RATS, refer to the "Update" column, or the "Upgrade" prices if you upgrading to *WinRATS-32* from *WinRATS–16* or *RATS386*, or to *MacRATS PPC* from *MacRATS '020* or *MacRATS*. The "Prefix" column refers to the first two letters of the serial number for your current license (printed on your diskette labels)—you can use this to determine the appropriate price for your update/upgrade.

Product	New	Update	Upgrade	Prefix
WinRATS–32	$500	$125	—	WE
WinRATS–16	$400	$125	$200	WS
RATS386	$420	$125	$200	L3
MacRATS PPC	$500	$125	—	MP
MacRATS '020	—	—	$200	M2
MacRATS	—	—	$200	M1

For multiple copy and network pricing, or for pricing on UNIX and Linux versions, please contact Estima at (800) 822-8038 or *sales@estima.com*, or visit our website at *www.estima.com*

Minor Update for Windows/DOS

Download RATS 5.01 from Web Site

Version 5.01, a minor update for the DOS and Windows versions of RATS 5.0, is now available for downloading from our web site, at www.estima.com.

This is a bug-fix update only, with essentially no new functionality. Various issues reported by users in the more than sixth months since the release of RATS 5.0 are fixed in this update. A couple of changes were also made to resolve inconsistencies between the software and the documentation. For details, see the "Tech Support" section of the Web site, which includes a list of known bugs in 5.0.

To get the update, just download the appropriate Zip file (depending on whether you have WinRATS-32, RATS386, or the 16-bit Windows version, and whether or not you have the X11 seasonal adjustment module). Then, unzip the files into your RATS directory, and execute the program "PATCH" from that directory (either using the *Start–Run* operation, or from the DOS prompt).

Please note: All of these fixes have already been incorporated into the Macintosh, UNIX and Linux versions that have just recently been released, so there is no bug-fix update necessary for those products.

Using CATS With RATS 5.0

Some new features in Version 5 required changes to the CATS procedure files. The Windows and DOS versions shipped with a CATS File Update that you could run to update your CATS files. If you have CATS version 1.00–1.02, you should run this updater. Depending on when you purchased your copy of RATS 5, you may also need to download a copy of the file CATSMISC.SRC from our Web site. See the web site or contact Estima if you have any questions.

MacRATS 5.01 users who also have CATS licenses should have received complete, updated copies of CATS on their MacRATS CD's—please be sure to install and use the new version of CATS.

Contents

Econometrics Texts Available from Estima

Estima is pleased to be able to distribute the Econometrics books listed below. Note that there are no shipping charges for orders shipped via UPS Ground anywhere in the US. Additional charges apply for shipping outside the US, or for faster shipping in the US. You can order via the on-line ordering system on our Web site, or by phone, fax, mail, or e-mail. Please contact Estima if you have any questions.

Applied Econometric Time Series and The RATS Handbook, *by Walter Enders*

Textbook List Price $86.95, Estima's Price $80.00
Handbook List Price $36.95, Estima's Price $34.50
Wiley and Sons Press, 1995 and 1996.

We have been distributing the two Enders books for some time now, and both have proven to be very popular among RATS users. Additional details are available on our website, but, briefly:

The *Applied Econometric Time Series* text provides a lucid introduction to and discussion of most of the key topics in modern time series econometrics, including: Difference Equations; Stationary Time-Series Models; Modeling Economic Time Series: Trends and Volatility; Testing for Trends and Unit Roots; Multiequation Time-Series Models (VAR Models); and Cointegration and Error-Correction Models.

It is geared towards those taking Masters and PhD courses in time series analysis or advanced econometrics, or for professionals who wish to learn more about time series analysis techniques.

The *RATS Handbook for Applied Econometric Time Series*, written to accompany the textbook, is very helpful resource for new RATS users, and for those who are looking to explore time series techniques in more depth. It can serve either as a stand-alone workbook for RATS users, or as a perfect companion to the *Applied Econometric Time Series* text. It is particularly well suited for students and professors who are using RATS in a time series econometrics course. However, other users who are either new to RATS, or who are new to these techniques should also find it very helpful.

Econometrics, *by Fumio Hayashi*

List Price $59.50, Estima's Price $45.00
Princeton University Press, 2000.

Hayashi's book approaches econometrics through the unifying framework of the Generalized Method of Moments (GMM). This makes for an excellent fit with RATS, as the RATS manual offers much of the same information without the technical details. The RATS 5 manual, for instance, includes a phrase like "Under the correct assumptions, some Central Limit Theorem will apply...". Hayashi provides both the assumptions and the precise form of Central Limit Theorem.

If you've ever wondered about the source of the ROBUST-ERRORS option in RATS or what the weighting matrices really are, this book can answer your questions. Each of the chapters includes empirical exercises with real-world data sets. These are liberally laced with specific tips for users of RATS, TSP and Gauss.

This book is not for the mathematically challenged. While intended for first year Ph.D. students, it assumes significant knowledge of probability and mathematical statistics as a prerequisite. In practice, we would imagine that the curriculum would include at least a one quarter treatment of those subjects before moving into this.

Topics include: Finite-Sample Properties of OLS; Large-Sample Theory; Single-Equation GMM; Multiple-Equation GMM; Panel Data; Serial Correlation; Extremum Estimators; Examples of Maximum Likelihood; Unit-Root Econometrics; Cointegration.

Time Series Analysis, *by James D. Hamilton*

List Price $70.00, Estima's Price $55.00
Princeton University Press, 1994.

It's not an accident that Hamilton's book is referenced extensively in our latest revision of the RATS manual, and in many journal articles published since its release in 1994. This is a detailed, in-depth treatment of modern time series analysis and econometrics that can serve both as a textbook for the student and an advanced reference for practicing researchers. Just under 800 pages, hardbound.

Topics include: Difference Equations; Lag Operators; Stationary ARMA Processes; Forecasting; Maximum Likelihood Estimation; Spectral Analysis; Asymptotic Distribution Theory; Linear Regression Models; Unit Roots in Multivariate Time Series; Cointegration; and much, much more.

The Econometrics of Financial Markets, *by Campbell, Lo, and MacKinlay*

List Price $65.00, Estima's Price $50.00
Princeton University Press, 1997.

As the title indicates, this book focuses on the application of econometric techniques in the realm of financial markets. Geared towards PhD students, advanced MBA students, and financial industry professionals, it tackles everything from CAPM and Arbitrage models, to interest rate structures, ARCH models, and chaos theory. Just over 600 pages, hardbound. Topics include: Predictability of Asset Returns; Market Microstructure; Event-Study Analysis; The Capital Asset Pricing Model; Multifactor Pricing Models; Present-Value Relations; Intertemporal Equilibrium Models; Derivative Pricing Models; Fixed-Income Securities; Term-Structure Models; and Nonlinearities in Financial Data.

Version 5.0 Manual Errata

A few typos found their way into the heavily revamped Version 5 RATS manuals. We'd like to note a couple of important corrections here.

Please note that these corrections are already included in the PDF files distributed with RATS beginning with the release of Version 5.01 for Windows, DOS, Mac and UNIX.

More complete listings of manual errata will be maintained on our web site, at the URL:

www.estima.com/errata.htm

Blanchard–Quah Examples

The BQ decomposition examples on pages 296-7 in the *User's Guide* are missing a transpose function. Rather than:

```
compute bqfactor=%varlagsums*$
%decomp(%mqform(%sigma,inv(%varlagsums)))
```

the code on page 296 should read:

```
compute bqfactor=%varlagsums*$
 %decomp(%mqform(%sigma,tr(inv(%varlagsums))))
```

Multivariate AIC and BIC Formulas

The formulas for the Akaike and Bayesian Information Criteria shown on page 289 (and in the VARLAG.PRG example file), are incorrect—the first term should be –1.0, rather than –0.5. If you prefer, you can also write the formulas such that the favored model is indicated by the *minimum* value, rather than the *maximum* value, as shown below:

```
compute bic = $
   %nobs*%logdet + 5*(5*lags+1)*log(%nobs)
compute aic = %nobs*%logdet + 5*(5*lags+1)*2
```

Fat Tails for GARCH

The sample likelihood function on page 352 of the *User's Guide* is missing a parenthesis. It should read:

```
frml logl = (h(t)=hf(t)),(u(t)=resid(t)), $
   log(%tdensity(u/sqrt(h),vd))-.5*log(h)
```

Hamilton Switching Model

The HAMILTON.PRG example program should include a preliminary **MAXIMIZE** instruction using several iterations of **SIMPLEX** before switching to the BFGS estimation. See the updated Hamilton example discussed elsewhere on this page for an even better solution.

%STDERRS Reserved Variable

Page 198 of the *Reference Manual* incorrectly identifies the variable holding the standard errors of the coefficients as %STDERRORS. The correct name is %STDERRS.

NOSPREAD Is Default for PSTATS

The default setting for the SPREAD option on the **PSTATS** instruction is not specified on page 272 of the *Reference Manual*. The default is NOSPREAD.

Updated Switching Model Code

As some of you may already know, Hamilton Switching Models, of the type described on pages 356–359 of the *RATS 5 User's Guide*, are often very difficult to fit. In fact, the example shipped with RATS (in the file HAMILTON.PRG) only works well as written if you:

a) include a preliminary MLE step using the SIMPLEX algorithm—a step that was inadvertently omitted from the example program, and

b) limit the data range to the same period (1952–1984) used in Hamilton's actual study.

The model fails miserably with the full data set running through 1998, despite various attempts with a variety of different initial conditions.

Fortunately, Andrew Leach, a student at Queen's University in Canada, has come up with a useful solution to this problem. The same approach should be helpful for many other switching model applications.

Andrew's code uses an EM algorithm to fit a model with only one lag. The estimates produced by this model are then used as initial conditions for the parameters in the full information likelihood estimation. As a result, the **MAXIMIZE** estimation of the full model converges nicely. You can download the new HAMILTON.PRG example from our web site.

Other New RATS Procedures

We've recently reorganized the "Procedures and Examples" page on our website to make it easier to read and to locate files of interest. We've also posted several new procedures in recent months. To download these, or any of the more than 70 other procedures and examples available free of charge, just point your browser at www.estima.com and click on the "Procs/Examples" button. The latest additions include:

PANELSCC.SRC, which computes a Spatial Correlation Consistent (SCC) covariance matrix from panel data. Converted from Gauss and TSP code by Steve Green.

Two new "HEGY" seasonal unit root procedures:

MEGHY.SRC implements the HEGY seasonal unit root test for monthly data. By Ulrich Leuchtmann. Requires the LAGSELEC.SRC procedure (by Norman Morin), also available on the web site.

HEGYQNEW.SRC, a newer version of the quarterly HEGY test, that includes automated lag-length selection and other new features. By Jesper Hansson.

SPECDENS.SRC calculates the spectral density matrix at frequency zero, i.e., the long-run covariance matrix, of a set of series using nonparametric methods. By Norman Morin.

EGCRTVAL.SRC computes "exact" critical values for the Dickey-Fuller and the Engle-Granger cointegration tests from the response surface regression in MacKinnon (1991). By Stephan Kohns.

US and Internatial Economic Databases

NEW! US Data from Haver Analytics

Estima is pleased to announce a new partnership with Haver Analytics, which will allow us to provide our customers with high quality US economic database services at very reasonable prices. There are three packages from which to choose:

USECON Database

USECON (U.S Economic Statistics) is Haver's primary database of U.S. economic and financial data. It includes approximately 12,000 data series, including national accounts, prices, housing, construction, industrial production, interest rates, money supply, public finance, wholesale and retail trade, manufacturers' shipments, inventories and orders, employment, productivity, population, international trade and business cycle indicators.

USNA Database

Purchasers of the USECON database have the option of also subscribing to the USNA (U.S National Accounts) database, which offers 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.

US1 Database

The US1 database is a subset of the USECON database, containing approximately 750 of the most commonly-used data series.

Pricing and Distribution Details

The data are supplied on CD ROM, both in RATS format, and in Haver's DLX (Data Link Express) format.

RATS users can access the RATS files directly using RATS or the menu-driven RATSDATA utility program. Customers with Version 5 of WinRATS-32 can obtain a DLL file that also allows RATS to access the DLX versions of the data files.

The CD will also include a copy of the menu-driven RATS-DATA data-management software for customers who do not have RATS or Haver's DLX software.

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).

Pricing is shown below. Please contact Estima for details or to place an order.

Product	Commercial Monthly	Academic Monthly	Academic Quarterly	Academic Annual
USECON	$4,000	$3,000	$1,500	$1,000
USECON+NA	$5,000	$3,750	$2,000	$1,500
US1	$1,200	$900	$750	$500

OECD Main Economic Indicators Database

In addition to the US data available from Haver Analytics, we continue to offer the OECD's Main Economic Indicators database. The OECD MEI data is available in two versions: the "G7" database includes data for the original G7 countries, and the "Full" database, which includes all OECD member nations, as well as a variety of regional data series.

Monthly, quarterly, and annual subscriptions are available, as are academic discounts. The data are supplied in RATS format files (one per country), and are now shipped on a single CD ROM disc, rather than on diskettes, greatly simplifying the installation process. Please contact us for pricing.

RATS in the Classroom—New Options

Classroom RATS

We are continuing to offer the "Classroom" version of RATS, which is identical to the standard version of RATS in every way, except that it is limited to handling a maximum of 3,000 data points at any given time (for instance, 30 series of 100 data points each). However, *Classroom RATS* is now available in two formats (at two price levels): with or without printed versions of the manuals.

Both versions include complete electronic copies of the manuals in Adobe's PDF format, so the only difference is the added convenience of having the printed books.

With the printed version of the manuals, the price for Classroom RATS is $60. Without the hard copy documentation, the price is just $40.

Professors can order copies themselves for resale to their students, or place an order through a university bookstore (minimum order of 5 copies).

Student Discounts

For students who need more data-handling capability, we offer $200 student discounts off any of the standard PC or Macintosh products. For example, WinRATS-32 is just $300 with the discount, rather than the usual price of $500. Proof of student status, such as a letter from a faculty member or a copy of a current registration receipt, is required.

Network and UNIX\Linux Licenses

Estima also offers pricing plans for Network PC or Mac or multi-user UNIX/Linux installations. Please contact Estima for a quote.