The RATSletter

RATS 7.10

Version 7.10 of RATS is now available. Users with current Update Subscriptions will receive their updates automatically.

If you don't have an Update Subscription, you can purchase an update from 7.0 on CD for $25. Updates from older versions are $150 (plus shipping for customers outside the U.S.). Windows users with Version 7.0 also have the option of downloading a patch free of charge from our website. Note, however, that the download only updates the RATS executable; unlike the CD update, it does not include the new and updated examples and procedures that are described throughout this newsletter.

This release offers several new interface features, one new instruction and some new options for existing instructions. The most significant changes are:

- The addition of contextual (or "pop-up") menus to the interface. You can now right-click (Ctrl+click for Macintosh) on many objects to get a pop-up menu of operations that can be performed on, or using, that object. These provide a convenient alternative to the regular menu operations and toolbar buttons.

- A new *View* menu provides standard menu items for operations which previously were only on toolbar buttons (such as the quick graphs and autocorrelation functions).

- A new menu-driven *Wizard* has been added for doing scatter plots.

- The new **GBOX** instruction does box plots, either of a set of series, or of subsets within a given series.

- The **DSGE** instruction has been improved. This includes better checks for problems with the model.

- Many instructions (**STATISTICS**, **LINREG**, **DDV** and others) have new WEIGHT options for dealing with stratified samples.

- **SET**, **GSET**, and **CSET** have a new STARTUP option. Similar to the STARTUP option on **MAXIMIZE**, these allow you to evaluate an initializing formula before the first value of the series is computed.

New DISAGGREGATE procedure

For years, RATS has offered several procedures for "interpolating" data, that is, converting data from a lower to a higher frequency. Most of these were actually designed to do what is more correctly called *distribution* (applied to flows), in which the constructed series is designed to sum to the observed series over the interval.

The new procedure **DISAGGREGATE** uses the power of the state-space modeling instruction **DLM** to provide "one-stop-shopping" for most of these techniques.

The connection between the high frequency and interpolated series is represented by one of the models (chosen using the MODEL option with the value in parentheses):

(1) $I_t = H_t + Z_t$ (LINEAR)

(2) $I_t = H_t Z_t$ (PROPORTIONAL)

(3) $\log I_t = H_t + Z_t$ (LOGLIN)

The LINEAR model is the base for the commonly used Chow-Lin, Fernandez and Litterman procedures (all of which can be done with the RATS procedure **CHOWLIN**), and also used in the **INTERPOL** and **DISTRIB** procedures, which are just "Chow-Lin" without any related series.

While this is technically the simplest of the three, it likely is misspecified: most series to which it is applied would naturally be modeled in log form. The PROPORTIONAL model is used in the proportional Denton method (RATS procedure **DENTON**), but that has limited applicability as it requires (for simplicity) a higher frequency series which is *very* closely related to the target series, basically a higher frequency (but presumably noisier) measure of the same information.

The main addition with **DISAGGREGATE** is the MODEL=LOGLIN setting. This is technically more demanding than the others because it requires a state-space model with a non-linear observation equation. This requires iterating over linearizations.

The other key options are

MAINTAIN=[SUM]/AVERAGE/FINAL

which indicates what the disaggregated data are supposed to match in the lower frequency data. SUM is the sum across the subperiods, AVERAGE is

RATS 7.10: Prices and Ordering

New Online Shopping Cart

We've introduced a new "shopping cart" style on-line ordering system on our website. Item listings and prices are now easier to find and read, you can more easily order multiple items, and the overall process is easier and faster.

Updating to 7.1

If you haven't yet updated your older license to Version 7.0, the basic price for a single-user update to the standard release from *any* older version of RATS is just $150. This includes the software plus a new set of documentation.

Note that you do *not* have to have the older software still installed in order to get an update. You do, however, need to have the serial number. If you cannot find your serial number, contact us at *sales@estima.com* or 800-822-8038 before placing your order. (Note, by the way, that if you received this in our July mailing, according to our records you *have* a RATS license. The serial number is printed on the envelope).

There are no shipping charges on these updates or upgrades for orders shipped to locations in the contiguous U.S. Add $30 for shipping to Alaska, Hawaii, Canada, and U.S. possessions, and $50 for shipping to other countries.

If you already have version 7, the CD update to version 7.10 is just $25 (postage included).

For an extra $150, you can upgrade to the Professional version, which adds X11 seasonal adjustment, ODBC/SQL support, and the ability to read and write several other specialized data formats, including FAME format data files.

	What you want:	
What you have:	**RATS**	**RATS Pro**
RATS Pro v. 7.0	—	$25
RATS v. 7.0	$25	$150
RATS Pro (earlier)	—	$150
RATS (other, earlier)	$150	$300

Please contact Estima if you have any questions, or if you need to update a multi-user or UNIX/Linux license.

Update Subscriptions

Update subscriptions provide a convenient way to budget your software expenditures, and are the easiest way to ensure that you receive all updates to RATS as soon as they are released. We offer two forms of update subscriptions: version and annual. Most (current) multiple user licenses are on annual subscriptions. These provide all updates for one year. The expiration date for this will usually be on the label on the CD envelope. If you (think you) need to renew yours, please contact us for pricing.

Single user licenses are generally handled using the version subscriptions, which provide all updates up to and including the next major release. If you currently have version 7.0, the version update subscription would cover all updates up to and including version 8.0. You can renew your update subscription for just $150 for a single user license (plus shipping for customers outside the U.S.).

New Academic Pricing

From the beginning, our principal market has been academic. As a result, we have generally aimed our pricing for that market, with a fairly modest initial price (with quantity discounts) and low-priced updates. However, we realize that even our relatively low prices can be a problem outside the higher income countries. So we are now offering our "student" pricing of $300 for RATS, $450 for RATS Pro and $125 for CATS to academic customers in countries that aren't on the World Bank's list of high-income countries. Multiple user (academic) prices and renewals have been reduced for these countries as well.

E-Courses Under Development

We're quite often asked about training options for RATS. However, given time and budget constraints, it's quite difficult to arrange a cost-effective face-to-face training program. As a result, we're currently developing e-courses for RATS, with our first one(s) expected in September. Please keep an eye on our web site for details. If you have any suggestions for topics, please let us know. You can e-mail them to sales@estima.com.

- The **KALMAN** instruction now has a DISCOUNT option. As with the DISCOUNT option on **DLM**, this allows for multiplicative (rather than additive) changes to the variance of the states.

- FORMAT=ODBC on the Pro version can now handle much longer (effectively unlimited length) SQL queries. This format has also been added to the Macintosh Pro release.

- **STWISE** (stepwise regression) now has a GTOS option which only drops variables from the end of the list. This can be used to do automatic pruning of lags in autoregressions.

New Procedures

All of these are available now at www.estima.com. They are also included with Version 7.10. The filenames for each procedure are shown below. In each case, the procedure name is the same as the filename, omitting the `.SRC` extensions. For example, the file `ARCHTEST.SRC` contains the procedure `ARCHTEST`.

archtest.src

Tests for ARCH effects in a series. Can do a single test for a set number of lags, or a sequence with different numbers of lags.

cancorr.src

Computes the canonical correlations and related statistics for two sets of series, possibly conditioning on the third set.

chowdenning.src

Computes the multiple variance ratio statistic from Chow, K.V. and Denning, K. (1993) "A Simple Multiple Variance Ratio Test", *Journal of Econometrics*, vol. 58, pp. 385-401.

corrado.src

Computes the non-parametric test statistic from Corrado (1989), "A Non-Parametric Test for Abnormal Security-Price Performance in Event Studies", *Journal of Financial Economics*, vol. 23, pp. 385-395.

corrintegral.src

Computes a correlation integral for a series. This has been stripped out of the **BDSTest** procedure for use in other applications.

denton.src

Implements the proportional Denton method of benchmarking, distributing the sum from a low frequency series based upon the period-to-period rates of change of a (single) higher frequency series. This is designed to be used when the two series are closely related, with the more frequent series being a noisier measure of the less frequent one. The newer procedure **DISAGGREGATE** (see below) does the same calculation and more.

disaggregate.src

General disaggregation procedure, for doing interpolation and distribution. *See page 1 for more.*

gibbsvar.src and ssvar.src

These use Gibbs sampling techniques to compute posterior distributions of the parameters (and optionally forecasts) of a VAR. Written by Todd Clark, drawing on code by Tom Doan. *See page 4.*

icss.src

Inclan-Tiao test for breaks in variance. Based on Inclan and Tiao (1994), "Use of Cumulative Sums of Squares for Retrospective Detection of Changes in Variance", *JASA*, vol. 89, pp. 913-923.

lsunit.src

Implementation of Lee-Strazicich LM unit root tests with one or two structural breaks. Optionally, it can do more than two breaks. From Lee and Strazicich (2004), "Minimum LM Unit Root Test with One Structural Break", Appalachian State University Working Paper; Lee and Strazicich (2003), "Minimum LM Unit Root Test with Two Structural Breaks", *Review of Economics and Statistics*, vol. 85, no. 4, pp. 1082-1089.

mcleodli.src

Implements the McLeod-Li test for nonlinearity (ARCH effects). McLeod and Li (1993), "Diagnostic Checking of ARMA Time Series Models Using Squared Residual Autocorrelations", *Journal of Time Series Analysis*, vol. 4, pp. 269-273.

paneldols.src

A procedure implementing Peter Pedroni's methodology for group mean panel tests using Dynamic OLS. Pedroni (2001) "Purchasing Power Parity Tests in Cointegrated Panels", *Review of Economics and Statistics*, vol. 83, pp. 727-731.

rannormaltrunc.src

Generates a (single) draw from a truncated random Normal distribution, which can be truncated above, below or both.

regpcse.src

Computes a Panel-Corrected version of an OLS regression on a panel data set. Used after the **LINREG** which does the OLS estimates. Based on Beck and Katz (1995), "What to Do (and Not to Do) with Time-Series-Cross Section Data in Comparative Politics", *American Political Science Review*, vol. 89, pp. 634-647.

tsaynltest.src

Performs the Tsay Ori-F test for neglected non-linearities in an autoregression. Tsay (1996), "Nonlinearity Tests for Time Series", *Biometrika*, vol. 73, pp. 461-466. Also, Luukkonen, Saikkonen and Terasvirta (1988), "Testing Linearity Against Smooth Transition Autoregressive Models", *Biometrika*, vol. 75, pp. 491-499.

Web Site Procedure Browser

With the ever-growing number of procedures and examples available on our website, it can sometimes be difficult to find those that might be of interest. Also, with many different releases of RATS in use, it can be hard to know which procedures will work with your software.

With that in mind, we've introduced a new Procedure Browser tool on our website. The browser allows you to view procedure and example files:

- in a given category
- that reference a specific author
- that work with your specific version of RATS
- or that have been improved since a given release of RATS.

or any combination of the above. For example, you could view a list of all of the "Forecasting" procedures and programs that work with Version 6.0 (or later) of RATS.

And for those of you using older releases of RATS, the browser also gives you access to older versions of procedures that will work with your version of the software. Note, however, that some procedures depend crucially on newer features, and thus will not be available for previous versions of RATS. Anyone actively using RATS is strongly encouraged to get an update.

To use the browser, just go to:

www.estima.com/procindx.shtml

and click on "Procedure and Example Browser".

New Paper Replication Examples

We've posted on the web site two new paper replication examples. These include both programs and data. They're also included on the 7.10 CD.

pedronirestat2001.zip

Replicates Pedroni (2001) "Purchasing Power Parity Tests in Cointegrated Panels", *Review of Economics and Statistics*, vol. 83, pp. 727-731. This demonstrates the procedures **PANELFM.SRC** and the new **PANELDOLS.SRC**.

quahvaheyej1995.zip

Replicates Quah and Vahey (1995), "Measuring Core Inflation?", *Economic Journal*, vol. 105, pp. 1130-44. This demonstrates the use of the the **HISTORY** instruction and the %BQFACTOR function.

Gibbs Sampling VAR Procedures

Todd Clark, of the Federal Reserve Bank of Kansas City, has written two procedures that implement Gibbs Sampling techniques for VAR models.

GIBBSVAR uses Gibbs sampling to compute posterior distributions of the parameters of a VAR, along with forecasts. The model/estimator is the normal-diffuse of Kadiyala and Karlsson (1997), "Numerical Methods for Estimation and Inference in Bayesian VAR Models," *Journal of Applied Econometrics*, pp. 99-132.

SSVAR uses Gibbs sampling as in Villani and Mattias (2006), "Inference in Vector Autoregressive Models with an Informative Prior on the Steady State," Sveriges Riksbank Research Paper No. 19, forthcoming in the *Journal of Applied Econometrics*. This generates posterior estimates (including forecasts, if the user chooses). The model/estimator is similar to the normal-diffuse of Kadiyala and Karlsson (1997) extended to allow a prior on the steady state.

The model takes the form

$$\Pi(L)\left[y_t - \Psi d_t\right] = \varepsilon_t$$

where $\Pi(L) = \mathbf{I} - \Pi_1 L - \ldots \Pi_k L^k$ and the prior on Σ is diffuse.

the average, and FINAL is the last value. So **DISAGGREGATE** handles both interpolation (MAINTAIN=FINAL) and distribution (one of the other two).

TSMODEL=[RW1]/AR1/RWAR1/RW2

chooses the time series process for the noise model. The AR parameter in the AR1 and RWAR1 models can either be fixed or estimated.

An example of its use is

```
@disaggregate(tsmodel=rw1,factor=3,$
  maintain=average,model=log) $
  usaqtr / usachowlin
# logincome trend
```

which does a log-linear "Fernandez" distribution (random walk noise model).