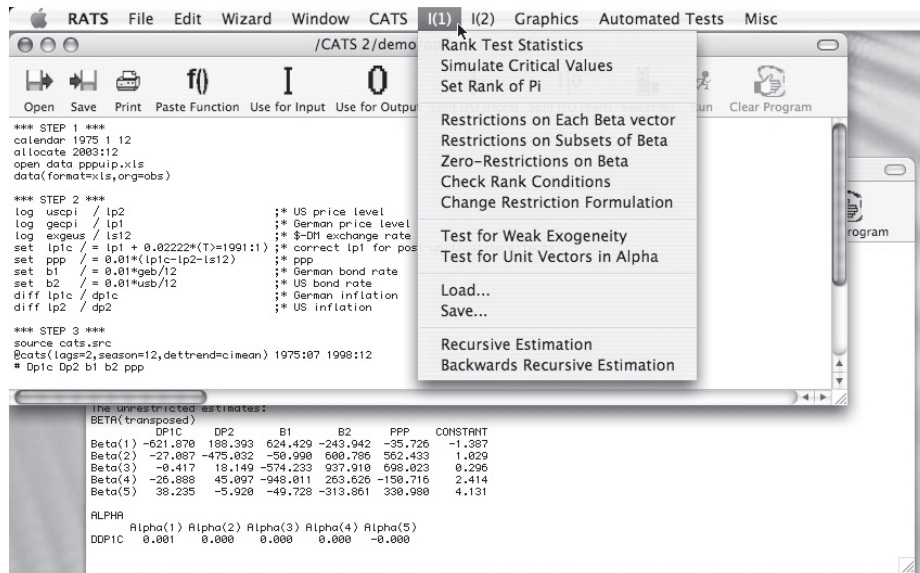


RATS 6.3: First OS X Release, All New UNIX Interface, and More!



MacRATS 6.3 for OS X—shown here running Version 2 of the CATS Cointegration Analysis package. Our new UNIX and Linux releases now feature a similar interface.

New UNIX Interface

With the release of UNIX RATS Version 6.3, our powerful interactive interface, previously available only for Windows and Macintosh, is also now available to UNIX and Linux users.

The interface will be familiar to those of you who have used WinRATS or MacRATS.

Built around a text-editor that can execute RATS instructions, the interface makes it much easier to develop, test, and modify new programs, and allows you to run existing programs with just a few mouse clicks,

The editor also provides access to twenty-one menu-driven *Wizards*. These *Wizards* expedite many common tasks, including reading in data, generating graphs, doing regressions, testing hypotheses, and much more. They also greatly reduce the size of the learning curve for new RATS users.

Other features include integrated editing of RATS format data files, spreadsheet style windows for displaying and exporting reports and other output, and the ability to write sophisticated menu- and dialog-driven end-user applications.

Compiling UNIX or Linux RATS with the interactive editor interface requires the Motif libraries, which are available for most systems. For details and pricing information, please contact Estima.

MacRATS for OS X—Runs on Both Intel and PowerPC Macs

We are also pleased to announce the first version of MacRATS designed specifically for the OS X operating system. This brings all of the new interface features introduced in WinRATS 6.2 to the Mac platform, using the OS X look and feel.

MacRATS 6.3 is what Apple calls a “Universal” application, meaning that it runs natively on both Intel-based Macs and older PowerPC-based systems. This allows you to extract the maximum performance from whichever Macintosh platform you are currently using.

Single-user updates are just \$25 for users with MacRATS 6.0 or 6.1, or \$150 for users with older versions (even versions as old as 2.0—our very first Macintosh release).

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Other New Features in RATS 6.3

Although our first OS X release and the new UNIX interface are the big changes in RATS 6.3, there are other improvements as well. See page 2 for details.

CATS 2.0 for MacRATS, UNIX, and Linux

The debut of these new releases for the Mac, UNIX, and Linux platforms has also allowed us to port Version 2 of the CATS cointegration package to these platforms. See page 4 for more information.

LQPROG for Portfolio Optimization

We've received several requests for examples doing portfolio optimization in RATS. In most cases, this can be done quite easily using **LQPROG**, which solves linear and quadratic programming problems.

The example below traces out the mean-variance efficient frontier, solving a couple of quadratic programming problems along the way. The first **LQPROG** finds the global minimum variance portfolio. This uses a single constraint: that the sum of the weights is 1.0. (The non-negativity constraints on the portfolio weights are included by default. The **NNEG** option can be used in situations where some of the weights are allowed to be negative.)

The second **LQPROG** finds the minimum variance portfolio for a given expected return. The constraints there are again that the portfolio weights sum to one, and, in addition, that the dot product of weights with expected returns equals the target value for the portfolio expected return.

It should be easy to modify this for any number of assets—just change *N*, *ExpRet* and *CovMat*.

ExpRet and CovMat are the expected values and covariance matrix of the returns.

```
compute N=3
compute [vect] ExpRet = ||.15,.20,.08||
compute [symm] CovMat = $
    ||.20|.05|.30|-0.01|.015|.1||
```

Compute the minimum variance portfolio, and its expected return

```
compute units=%fill(1,N,1.0)
lqprog(q=covMat,a=units,b=1.0,equal=1) x
compute minr=%dot(x,expRet)
compute maxr=%maxvalue(expRet)
```

Create a grid series for expected values running from MinR to MaxR

```
set erets 1 101 = $
minr+(maxr-minr)*.01*(t-1)
set vrets 1 101 = 0.0
```

Find the minimum variance portfolio with the expected return $Erets(t)$. Note: the problem being solved is to minimize $(\mathbf{x}'\mathbf{Q}\mathbf{x})/2$ subject to the constraints. To get the variance (rather than half the variance), we need to multiply the optimized value by 2

```
do t=1,101
lqprog(noprint,q=covMat,$
a=%blockglue(||units|tr(expRet)||),$
b=||1.0|erets(t)||,equalities=2) x
compute vrets(t)=2.0*funcval
end do t
scatter(style=lines,$
vlabel='Expected Return',hlabel='Variance')
# vrets erets
```

More RATS 6.3 Features

As noted on page 1, the new UNIX and OS X releases are the most noteworthy changes in Version 6.3, but users on all platforms will benefit from other improvements, including:

- Another new menu-driven *Wizard*—this one provides an interface to the **PREG** instruction, for doing fixed and random effects and other panel data regressions.
- The restriction that **DECLARE** could not be used within a compiled section has been removed. Also, **LOCAL** instructions can now be placed anywhere within a compiled section and they can also include dimension fields. These changes make it much easier to convert existing programs to procedures, or to put a loop around a working piece of code.
- The **KALMAN** instruction has new options *X*, *Y* and *V* for doing “dummy observation” priors. These allow you to update the coefficients and covariance matrix without changing the data pointer.
- **BOOT** adds **BLOCK** and **OVERLAP** options for doing block bootstrapping. These were previously available in the procedure **BLOCKBOOT**.
- **FILTER** has a **REMOVE** option for removing trends and/or seasonals by regression.
- **ODBC/SQL** and **CRSP** Support. The Professional version of RATS now supports ODBC database connectivity, which allows users to extract data from a variety of data sources using SQL commands like this:

```
open odbc "Estima"
cal 1995 1 12
data(format=odbc,compact=sum,$
sql='select date,sum(subtotal) as sales
from newinv where invoice>0 group by
date order by date') 1995:1 2006:8
```

New Example Programs

We have new worked examples from two textbooks which focus on state space models:

Durbin and Koopman, *Time Series Analysis by State Space Methods*, Oxford University Press, 2001

West and Harrison, *Bayesian Forecasting and Dynamic Models*, 2nd ed. Springer, 1997.

These will be included with RATS 6.3, and will also be posted in the “Procedures and Examples” section of our web site.

Fan Charts and Confidence Bands

Some of you may not have noticed that we added support for fan charts in version 6.1 of RATS, so we thought we'd take a quick look at this new feature.

We'll use an example from *Forecasting: Methods and Applications, 3rd Edition*, by Makridakis, Wheelwright, and Hyndman (1998, Wiley). This is just one example of many, from this and other textbooks, that are included with current versions of RATS, and available on our website. The complete code for this example is on the file `mwhp366.prg`.

Here, we estimate an ARIMA model, generate forecasts, and then graph these along with 80% and 95% confidence bands—a task for which the fan chart approach is ideally suited. First we estimate the model using `BOXJENK`:

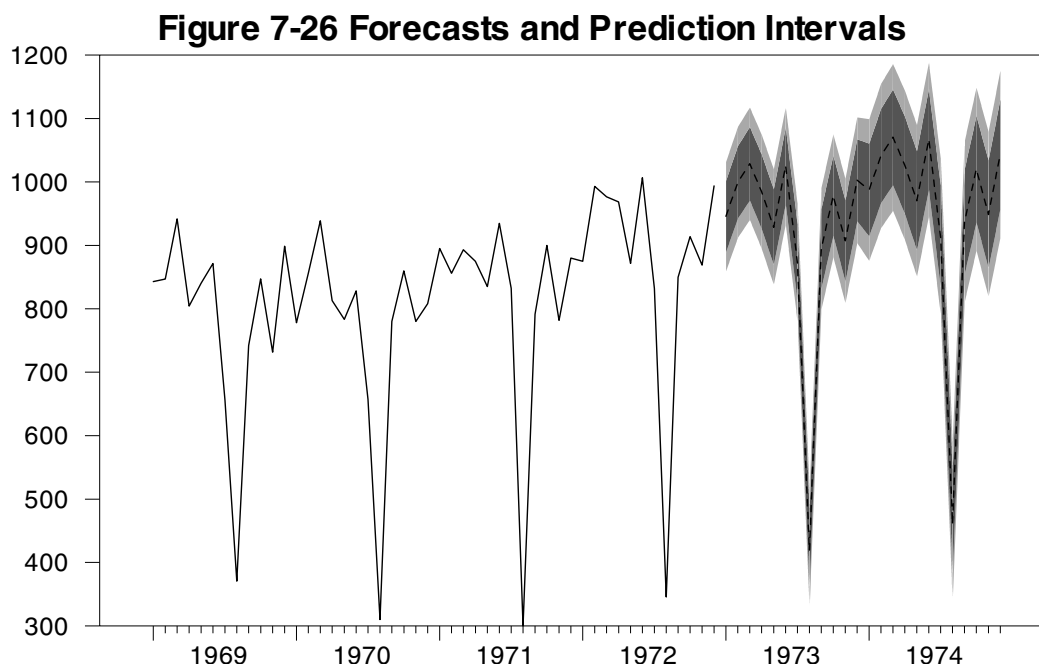
```
boxjenk(diffs=1,sdiffs=1,ma=1,sma=1,$
maxl,define=weq) writing / wresids
```

Then we compute forecasts and confidence bands:

```
smp1 1973:1 1974:12
uforecast(equ=weq,stderrs=stderrs) wfore
set lower95 =wfore+%invnormal(.025)*stderrs
set upper95 =wfore+%invnormal(.975)*stderrs
set lower80 =wfore+%invnormal(.1)*stderrs
set upper80 =wfore+%invnormal(.9)*stderrs
smp1
```

Finally, we graph the actual values and forecasts using the default line style, overlaying these with the confidence bands. The “OV” options tell RATS to graph the last four series using the “fan” style, and to use the same scales for both groups of series.

```
graph(header='Figure 7-26 Forecasts and
Prediction Intervals', $
ovcount=4,overlay=fan,ovsame) 6
# writing 1969:1 1972:12
# wfore
# lower95
# lower80
# upper80
# upper95
```



Prices for RATS and CATS

Standard pricing for single-user RATS and CATS licenses are shown below. These prices are for Windows and Macintosh versions only. Please see our website or contact Estima for prices for UNIX and Linux. WinRATS 6.2 users can also download a free update to 6.3 from our web site.

Product	New	Update from	
		6.x	Older
RATS 6.3	\$500	\$25*	\$150
RATS Pro 6.3	\$650	\$25*	\$150

Product	New	Update from 1.0
CATS 2.0	\$175	\$100

*Users with RATS 6.0 or 6.1 who purchase CATS 2.0 (new license or update) receive a free update to 6.3.

New RATS Discussion Forum

We invite you to visit The RATS Software Forum, our new web-based discussion forum devoted to the RATS software and related econometrics topics.

You can go directly to the forum at:

www.estima.com/forum

or use the “Forum” link on our home page.

We view this as a supplement to the email based “RATS Discussion List”, run for many years by Rob Trevor (see website for details).

Email lists and web forums each have advantages and disadvantages, and we think that having both resources available will be beneficial for our users.

As with the email discussion list, the staff at Estima will be active participants in the RATS Software Forum.

You Might Have a Network License

We often find that users at universities and other institutions are unaware that their organization already owns a multi-user license for RATS.

With that in mind, if you are considering purchasing a new license, have colleagues interested in using RATS, or perhaps want to use the program for teaching purposes, you may want to check our list of multi-user installations, available here:

www.estima.com/multiuserlicenses.shtml

Even if your institution's license is for an older version of the program, it is much cheaper to update an existing license than to purchase an all-new license.

Please contact us if you have any questions about existing multi-user licenses, or are interested in acquiring a new multi-user license.

More Data Added to OECD MEI

The OECD's Main Economic Indicators (MEI) database (available through Estima in RATS format data files), was recently expanded to include approximately 1,000 new data series.

Most of these are labor statistics that were previously provided in the OECD's "Quarterly Labour Force Statistics" report, and which have now been incorporated into the MEI. For most countries, the additions included twenty to thirty new series on measures including employment by industry (civilian and overall), various unemployment statistics, and hours worked by industry.

In addition, the database now includes a number of additional Composite Leading Indicators series for many countries. Other changes in the past few months include the addition of many "Real Indicators" series, and more standardized categorizations of series across countries, as well as additional money-supply, Balance of Payments, and production data.

Please see our website or contact Estima if you are interested in purchasing copies of the MEI database in RATS format. We offer annual subscriptions with updates on a monthly or quarterly basis, or you can purchase a single copy of the dataset.

The RATSletter

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CATS 2.0 for Mac, UNIX, and Linux

As you may recall, version 2.0 of our CATS cointegration analysis package debuted for the Windows platform earlier this year. With the arrival of RATS 6.3 for Mac OS X, UNIX, and Linux systems, we are now able to offer CATS 2 for those platforms as well.

Like its predecessor, CATS 2 has quickly redefined the state of the art in cointegration analysis. Developed by Jonathan G. Dennis, Katarina Juselius, Søren Johansen and Henrik Hansen of the University of Copenhagen, CATS 2 is a nearly complete rewrite of the previous release. It features a re-designed user interface, significant new econometrics capabilities, and an all-new user's manual.

Some highlights of this new release include:

- Bartlett small-sample correction of the tests for the cointegrating rank and hypotheses on β .
- A new automated model-selection procedure.
- Estimation and testing of the I(2) model.
- System reduction tests for lag length.
- Missing observations in data allowed.
- All-new user interface, with separate menus for various categories of operations.
- The ability to change the underlying VAR model without quitting and re-starting CATS.
- User control over all procedure settings, such as iteration limits, convergence criteria, and output formatting.
- The option to export the estimated model as a RATS "MODEL" variable, making it much easy to compute forecasts and impulse responses.
- Restrictions can be saved and re-loaded, making it easier to replicate analyses or continue your work at a later time.

Please see our website for more on the features of CATS 2.0. Prices for single-user licenses and updates are shown on page 2. Multi-user licences and student discounts are also available—contact Estima for a quote.

CATS 2.0 requires RATS 6.2 or later. Users with version 6.1 or 6.0 of RATS can receive a free update to Version 6.3 with an order for CATS 2.0. Please see the CATS Order Form, or visit our web site for complete pricing and ordering information.

No More P.O. Box

Please Note: we no longer have a P.O. Box address. All correspondence, including payments and purchase orders, should go to address shown at left.