

Summer Course
Advanced Time Series and Forecasting
Assignment 3

See “rates.doc” for a description of the data file.

For all questions, use 1962:1 through 2012:6 as the sample period. Use the first 24 observations (1960:1 through 1961:12) for initial conditions and differencing transformations.

You are to calculate the following. You should write your own code (recommendation: use R), but can borrow from pre-existing code where you feel comfortable doing so.

You may or may not be able to complete all parts of each assignment each day. Get done what you can!

1. Take your favorite model from the previous assignment and revisit your one-step point forecasts.
2. Calculate 50% and 80% forecast intervals using the mean-variance approach.
3. Using the same regressors, estimate quantile regressions at the 10%, 25%, 75% and 90% quantiles
4. Use the quantile regression coefficients to make 50% and 80% forecast intervals
5. Use the same regressors to make direct 1 through 12 step forecasts
 - point forecasts
 - 50% and 80% interval forecasts
6. Create a fan chart to report your forecasts and forecast intervals
7. If you have time: Repeat the above exercise using your previously estimated model weights

To calculate quantiles, you will need the *quantreg* package, and for GARCH estimation, the *tseries* package

- If not installed, at the R console: “Packages/Install package/” find the package, and install
- Install libraries with command `library(quantreg)`
- command is `qr`
- Use `help(qr)`