Summer Course
Advanced Time Series and Forecasting
Assignment 2

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 the set of regressions you estimated in Assignment 1. Calculate forecast weights by cross-validation (CV).

2. Use these weights to make a one-step point forecast for July 2012.

3. Take the leave-one-out prediction residuals from question 1. Estimate a GARCH(1,1) model for the residuals.

4. Calculate a one-step forecast standard deviation from the GARCH model, and compare with the unconditional standard deviation.

5. If you have time, do the above analysis (questions 1-4) for both the pure autoregressive model as well as the model with exogenous variables.

To calculate forecast weights, you will need the *quadprog* package, and for GARCH estimation, the *tseries* package

- If not installed, at the R console: "Packages/Install package/" fine the package, and install

- Install libraries with command *library(quadprog) library(tseries)*

- commands are `solve.QP` and `garch`

- Use `help(solve.QP)` or `help(garch)` to learn more