UNIVERSITY OF NORTH CAROLINA
Department of Economics

Economics 275 — Dr. Gallant
Homework 2 — Fall 2000
Due September 20, 2000

The files tbill03m.dat, tbill12m.dat, and tbond10y.dat are available by anonymous ftp from host ftp.econ.duke.edu in directory pub/arg/data or click "Browse ftp site" on the course web page, www.unc.edu/ arg/econ275. These data are 1,809 weekly observations, January 5, 1962 – August 30, 1996, on three interest rates: the three month Treasury Bill rate from the secondary market (tbill03m), the twelve month Treasury Bill rate from the secondary market (tbill12m), and a ten year constant maturity Treasury Bond rate (tbond10y). Friday rates are used except when unavailable due to a holiday, in which case the Thursday rate is used.

Assignment:
Let y_t, $t = 1, \ldots, 1809$, denote the observations in one of these files, your choice. Use the default snpden and uniden settings to estimate the density $f(y)$ of y_t. Using kernel estimators (uniden and unireg) with more careful bandwidth selection, estimate the density $f(y)$ of y_t, the conditional mean $\mathcal{E}(y_t|y_{t-1})$, and the conditional variance $\mathrm{Var}(y_t|y_{t-1}) = \mathcal{E}[y_t - \mathcal{E}(y_t|y_{t-1})]^2$. Turn in six plots: the two default bandwidth density estimates, the kernel density estimate with a more carefully selected bandwidth, the estimated conditional mean, the estimated conditional variance, and the estimated conditional variance plotted against the estimated conditional mean. On each plot make sure that the legend gives the bandwidth that you used. On a separate paper briefly explain your bandwidth selection strategy for each of the last three plots.

If you wish, you can substitute a data set of your choice that has 1,500 or more observations in it.