Statistics 956 Homework No. 7
Due Monday February 28.

Reading You may need to review S-Plus basics, background on Markov chains, distribution theory, or hypothesis testing.

Estimation of a Transition Matrix

- Write a loopless S-function that takes four state occupancy vectors of the same length and estimates an associated 4-by-4 transition matrix.

- Write an S-function that takes a vector of length T and creates a 4-by-T matrix that contains the four state vectors consisting of indicators for "bottom quartile," "second quartile," "third quartile," and "top quartile."

- Take a vector $\{y_t\}$ of daily returns for some stock. Estimate the quartile-quartile transition matrix for your data. Call the estimate A.

- Now, take the squares $\{y_t^2\}$ of the returns and estimate the quartile-quartile transition matrix for your data. Call the estimate B.

- Technical note: You may need to preprocess $\{y_t\}$ by jittering. We will discuss this in class.

Thoughtfully Evaluate Your Computations: Informally and Formally

- Without formally addressing the issue of significance, what story emerges from your estimates?

- Now, engage the issue of significance. You should pursue this to the level of precision that is appropriate for your background and the time you have available. We will discuss the possibilities in class.

How to Present Your Work

- Give a one-page discussion of what you discovered from doing this exercise. The discussion should cover your results, but if you just review your results your discussion is likely to be dull and lifeless. Step out a little. Without overstating your case, you should make a strong effort to draw a broad inference from the exercise.

- Put copies or your code or other technical information in an appendix to your one-page discussion.

- Please do not ignore the instructions on how to present your work.

Other Considerations

There will be no new homework assigned on February 28, so you can enjoy a guilt-free break.