Assignment 10

1. Consider the demand of electricity of a manufacturing sector in the United States. The data are logged, denote the demand of a fixed day of each month, and are in power6.txt. Build an ARIMA time series model for the series and use the fitted model to produce 1- to 24-step-ahead forecasts.

2. Consider the monthly Aaa bond yields of the prior problem(Assignment 8 (4)). Build an ARIMA time series model for the series.

3. The quarterly gross domestic product implicit price deflator is often used as a measure of inflation. The file q-gdpdef.txt contains the data for the United States from the first quarter of 1947 to the last quarter of 2008. Data format is year, month, day, and deflator. The data are seasonally adjusted and equal to 100 for year 2000. Build an ARIMA model for the series and check the validity of the fitted model. Use the fitted model to predict the inflation for each quarter of 2009. The data are obtained from the Federal Reserve Bank of St Louis.

4. Consider the daily simple returns of IBM stock, CRSP value-weighted index, CRSP equal-weighted index, and the S&P composite index from January 1980 to December 2008. The index returns include dividend distributions. The data file is d-ibm3dxwkdays8008.txt, which has 12 columns. The columns are (year, month, day, IBM, VW, EW, SP, M, T, W, H, F), where M, T, W, R, and F denotes indicator variables for Monday to Friday, respectively. Use a regression model to study the effects of trading days on the equal-weighted index returns. What is the fitted model? Are the weekday effects significant in the returns at the 5% level?

5. Now consider similar questions of the previous exercise for the IBM stock returns.(d-ibm3dxwkdays8008.txt)

   (a) Is there any weekday effect on the daily simple returns of IBM stock? Estimate your model and test the hypothesis that there is no Friday effect. Draw your conclusion.

(b) Are there serial correlations in the residuals? Use Q(12) to perform the test. Draw your conclusion.