

Homework 4.

1. a) Download the data file Mkt_Data.csv from the course website. Use the MATLAB command `csvread` to read in the data (`data = csvread('filename')` – see MATLAB help for details). The first column is just the observation number. The second column is the response (nextbet), the third column is the previous bet, and the fourth is the previous market return. Create a design matrix by setting $x_1 = \text{ones}(1 : \text{size}(\text{data}, 1))$, $x_2 = \text{data}(:, 3)$, $x_3 = \text{data}(:, 4)$, and then by defining $X = [x_1, x_2, x_3]$. Let the response be $y = \text{data}(:, 2)$.
b) Use the MATLAB command `regress` to compute estimates for the regression $y = X\beta + u$: `[b, bint, r] = regress(y, X)` (see MATLAB help). The b 's are the coefficient estimates, `bint` gives 95% confidence intervals, and `r` is a vector of residuals. Compute the standard estimate of the error variance by $r' * r / (\text{size}(\text{data}, 1) - 3)$.
c) Modify the Gibbs sampler code posted online to estimate the model. Allow 1000 trails for burn in. Compute the means of the posterior marginals to get coefficient estimates, and use the quantile function to produce a 95% confidence interval for each variable. Try several 1) prior parameters 2) Gibbs sample sizes. Do you get different results? Create histograms of the posterior marginals and report the estimates for one set of parameters.