Homework 3

[**Instruction**: **1)** Please submit this assignment by 1PM on **June 20th**. You can also upload your assignment in the i-campus.]

1. [50 points] Use the data in SMOKE.xls and estimate the following model.

$$cig_i = \beta_0 + \beta_1 \log(income)_i + \beta_2 \log(cigpric)_i + \beta_3 educ_i + \beta_4 age_i + \beta_5 age_i^2 + \beta_6 restaurn_i + u_t$$

a) Report coefficient estimates and their standard errors. Discuss statistical significance of each explanatory variable at 5% level.
b) Conduct testing for heteroskedasticity (use Breusch-Pagan test) and conclude whether there exists heteroskedasticity or homoskedasticity in the error term.
c) Obtain heteroskedasticity-robust standard errors for the above model. Discuss any important differences with the usual standard errors.
d) Conduct the feasible GLS estimation explained on page 18 of the lecture note (LectureNote_Assumtion4.pdf). Is the income effect statistically significant?

2. [50 points] The file FISH.xls contains 97 daily price and quantity observations on fish prices at the Fulton Fish Market in Manhattan. Use the variable log(avgprc) as the dependent variable.
1) Regress log(avgprc) on four daily dummy variables, with Friday as the base. Include a linear time trend.This means that you estimate the following model.

$$\log(avgprc)_i = \beta_0 + \beta_1 mon_i + \beta_2 tues_i + \beta_3 wed_i + \beta_4 thurs_i + \beta_5 t_i + u_t$$

Is there evidence that price varies systematically within a week?
2) Now, add the variables wave2 and wave3, which are measures of wave heights over the past several days. Are these variables individually significant? Describe a mechanism by which stormier seas would increase the price of fish.
3) Test the errors for AR(1) serial correlation.
4) Obtain the Newey-west standard errors. What happens to the t statistics on wave2 and wave3? Did you expect a bigger or smaller change compared with the usual OLS t statistics?
5) Obtain the Cochrane-Orcutt estimates (use the iterated Cochrane-Orcutt method) for the model estimated in part 2). Are wave2 and wave3 individually statistically significant?