Name _____ **Surname** _____ **Student ID.** _____
DUE DATE : Tuesday 12^{th}, May 2016.

Assignment 6: (100 points)

I pledge to the Honor Code and to obey all rules for taking and performing homework assignments as specified by the course instructor.

Student Signature: _____

1. (50 points) Empirical Exercise: Heteroskedasticity Problem.

Consider the following model to explain sleeping behavior:

$$sleep = \beta_1 + \beta_2 totwrk + \beta_3 age + \beta_4 age^2 + \beta_5 yngkid + \beta_6 male + u$$

1.1 Use data in **SLEEP75.xls** to estimate the parameters of the above model.

1.2 Plot the diagram to show the relationship between $\hat{u_i}^2$ and the estimated Y_i from the regression line $\hat{Y_i}$. What does this figure suggest about heteroskedasticity?

1.3 Compute the Breusch-Pagan test for heteroskedasticity by using LM-test version and report your result. What do you conclude?

1.4 Compute the White-test for heteroskedasticity. Use the F-statistic version and report your result. How strong is the evidence for heteroskedasticity?

1.5 Compute the heteroskedasticity-robust standard errors , then compare the usual OLS standard errors with the heteroskedasticity-robust standard errors.

2. (50 points) Empirical Exercise: Autocorrelation Problem.
Consider the model:

$$Y_t = \beta_1 + \beta_2 X_t + u_t$$

where Y = inventories and X = sales, both measured in billions of dollars

2.1 Use data in **inventorysale.xls** to estimate the above model.

2.2 From the estimated residuals find out if there is positive autocorrelation using (i) Graphical Method and (ii) the Durbin-Watson test.

2.3 If you suspect that the autoregressive error structure is of order p, use the Breusch-Godfrey test to verify this. How would you choose the order of p ?

2.4 Apply the Newey-West method to obtain standard errors of OLS estimators that are corrected for autocorrelation and compare it with OLS standard errors.

2.5 What is the limitation of using this method?