ECON 7800, Assignment 2 **Instructor: Dr. Haimanti Bhattacharya**

1. Use "hprice.dta"

i. Regress *price* on *age, agesq, rooms, area, y81*. Interpret the model estimates. [4 points]

ii. Now regress *price* on *age, agesq, rooms, area, y81*, interaction of *rooms* and *area*. Interpret the model estimates. [4 points]

iii. If you had to choose between the above two models, which one would you choose? Why? [2 points]

iv. *Price* is measured in $ in the database. If you change the measurement unit of *price* to thousands of $, how would it affect the model estimates? Answer without re-estimating. [2 points]

v. *Area* is measured in square-foot in the database. If you change the measurement unit of *area* to square-meter, how would it affect the model estimates? Answer without re-estimating. [2 points]

vi. Now regress *lprice* on *age, agesq, rooms, area, y81*. Interpret the model estimates. [4 points]

2. Use "CEOSAL1.dta"

i. Estimate and interpret the results for the following model:

$\log(\text{salary}) = \beta_0 + \beta_1 \log(\text{sales}) + \beta_2 \text{roe} + \beta_3 \text{rosneg} + \varepsilon$

where, *rosneg* is a dummy variable which is equal to 1 if ros<0 and is equal to 0 otherwise. [4 points]

ii. Apply RESET test of the form:

$y = \beta_0 + \beta_1 x_1 + \ldots\ldots\ldots + \beta_k x_k + \delta_1 \hat{y}^2 + \delta_2 \hat{y}^3 + \text{error}$

to the model. Is there evidence of functional form misspecification? [3 points]

3. Use "bwght2.dta"

i. Regress log(birth weight) on mother's age, mother's education, number of prenatal visits, cigarettes per day, drinks per week

ii. Add mother's age square to model i.

iii. Add number of prenatal visits square to model ii.

Interpret the estimates the model of your choice. [5 points]

4. Use "beauty.dta"

Consider the following models where you regress *lwage* on

A: *educ, exper, expersq, belavg, abvavg, service, female, married*

B: *educ, exper, south, bigcity, union*

i. If you had to choose between the two models, which model would you choose? Clearly state the hypothesis and the test procedure that you use. [5 points]

ii. Interpret the estimates from the model of your choice. [5 points]