**ECO 5720**

**Problem Set 5**

1. Use the data in HPRICE1 to estimate the model

$$price=β\_{0}+β\_{1}lotsize+β\_{2}sqrft+β\_{3}bdrms+u.$$

Please obtain the usual and heteroskedasticity-robust standard errors and attach the Stata output. Are there any important differences between the two types of standard errors obtained?

2. Does the use of robust versus usual standard errors change the OLS residuals?

3. Use the data in CHARITY. The variable *respond* is a binary variable equal to one if an individual responded with a donation to the most recent request.

(i) Estimate a linear probability model for *respond*, using *resplast*, *weekslast*, *propresp*, *mailsyear*, and *avggift* as explanatory variables. Interpret the effect for *mailsyear*. Please attach the Stata output.

(ii) Estimate a probit model for *respond*, using *resplast*, *weekslast*, *propresp*, *mailsyear*, and *avggift* as explanatory variables. Find the average partial effect for *mailsyear*. Please look at how we calculated the average of probit marginal effects in the example do file from class. Please attach the Stata output.

(iii) Estimate a logit model for *respond*, using *resplast*, *weekslast*, *propresp*, *mailsyear*, and *avggift* as explanatory variables. Find the average partial effect for *mailsyear*. Please look at how we calculated the average of logit marginal effects in the example do file from class. Please attach the Stata output.

4. Please use the Stata dataset labelled as nsw\_dw.dta. As described at <https://users.nber.org/~rdehejia/data/.nswdata2.html>, the variables are: treatment indicator (1 if treated or part of a job training program, 0 if not treated or excluded from a job training program), age, education, married (1 if married, 0 otherwise), nodegree (1 if no degree, 0 otherwise), RE74 (earnings in 1974), RE75 (earnings in 1975), and RE78 (earnings in 1978).

(i) Estimate a linear regression model with RE78 as the dependent variable and the treatment indicator, age, education, married, nodegree, RE74 and RE75 as explanatory variables. What is the value of the average treatment effect, i.e., the effect of the treatment indicator on RE78? Please attach the Stata output.

(ii) Use *psmatch2* to estimate the average treatment effect using the nearest neighbor propensity score method. Following the example from class, please use a logit specification and the explanatory variables in (i) to estimate the propensity score. What is the value of the average treatment effect? Please attach the Stata output.

[Note: You may have to install *psmatch2* first by typing “ssc install psmatch2” in the command window.]