Econometrics: Problem Set 3

1. Using the data set 'teacher_ratings.csv' to carry out the following exercises. You will run 3 regressions, create a chart as we have seen displaying all the results for all 3 regressions. And as always also turn in your a copy of your script file and copy of R results.

a. Estimate a regression of *course_eval* on *beauty*, *intro*, *onecredit*, *female*, *minority*, and *nnenglish*.
b. Add *age* and age^2 to the regression. Is there evidence that Age has a nonlinear effect on Course_Eval? Is there evidence that Age has any effect at all on Course_Eval (ie. the combined effect is non-zero)?
c. Modify the regression in (a) so that the effect of Beauty on Course_Eval is different for men and women. Is the malefemale difference in the effect of Beauty statistically significant?
d. Professor Smith is a man. He has cosmetic surgery that increases his beauty index from one standard deviation below the average to one standard deviation above the average. What is his value of Beauty before the surgery? After the surgery? Using the regression in (c), construct a 95% confidence for the increase in his course evaluation.

2. Use the data set 'college_data.csv' to answer the following questions. Again create a table to contain all results from each regression.

a. Run a regression of *ed* on *dist*, *female*, *test*, *tuition*, *black*, *hispanic*, *incomehi*, *ownhome*, *dadcoll*, *momcoll*, *cue80*, and *wage80*. If Dist increases from 2 to 3 (that is, from 20 to 30 miles), how are years of education expected to change? If Dist increases from 6 to 7 (that is, from 60 to 70 miles), how are years of education expected to change?
b. Repeat the above regression but instead use *log(ed)* instead of *ed*. If Dist increases from 2 to 3 (from 20 to 30 miles), how are years of education expected to change? If Dist increases from 6 to 7 (from 60 to 70 miles), how are years of education expected to change?
c. Repeat the regression from part (a) but add in $dist^2$. If Dist increases from 2 to 3 (from 20 to 30 miles), how are years of education expected to change? If Dist increases from 6 to 7 (from 60 to 70 miles), how are years of education expected to change?
f. Add the interaction term dadcoll*momcoll to the regression in (c). What does the coefficient on the interaction term measure? Interpret the results on parental education.