Problem Set 5

1. Use Pset5Q1data.dta to solve this question. The data includes a treatment variable D, a running variable X, another covariate Z, an outcome variable Y. The discontinuity of treatment D is known to happen at X=1 cutoff.
2. Bin X variables using the width 0.05. Draw a scatterplot of the averages of D in each X bin. State whether you can use either sharp RD or fuzzy RD design.
3. Using the same binned X in (a), draw a scatterplot of the averages of Y in each X bin. State whether you see discontinuous jump in Y around the cutoff X=1.
4. Set the bandwidth=0.2. Estimate the RD estimate using 4th order polynomial. Report the estimate with the SE. Show the RD plot.
5. Change the bandwidth to 0.5. Estimate the RD estimate using 4th order polynomial. Report the estimate with the SE. Discuss how the estimate changes from (b). Show the RD plot.
6. Estimate the RD estimate using the `rdrobust’ command which computes the optimal bandwidth. Use the epanechnikov kernel. Show the `rdplot’ graph.
7. Examine whether a variable Z is balanced around the cutoff. State whether the evidence supports continuity assumption of RD.
8. Examine whether there is any evidence of self-selection around the cutoff using the density test (rddensity). Report the p-value.
9. Using a different cutoff point 1.3, do the placebo test. That is, redo the RD estimation using a different cutoff 1.3 State whether you find any significant treatment effect.