

ECON 6910
Applied Econometrics
Philip Shaw
Problem Set 9
Due Date: May 17, 2021

Chapter 2 Exercises (Li and Racine (2007)):
2.4, 2.6

Additional Problem:

For this problem consider a model that relates the wage (*wage*) to education (*educ*), experience (*exper*), and age (*age*):*

$$wage = g(educ, exper, age) + u \quad (1)$$

- a. First estimate a linear model with no interactions using the `lm` command in R. Are all variables statistically significant in explaining wage?
- b. Now, using the `npregbw` command from the NP package compute the optimal bandwidths using least-squares-cross-validation. What are the optimal bandwidths and how do they compare to those that you would compute using the ROT?
- c. Now plot the relationship between wage, education, experience, and age using the command `plot(bw,plot.errors.method="asymptotic")`. Which variables seem to have a statistically significant relationship with wage? How do you know?
- d. Restimate the nonparametric model imposing the ROT bandwidths and replot the nonparametric regression. Do your conclusions from part c. change?
- e. Now, using the `npcmstest` command, test whether the linear model is correctly specified.

*You should use the data set `wage2.csv` for this analysis.