Problemset 2

Econometrics III

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INSTRUCTIONS:

(1) You can work in groups, max. 4 people;
(2) If you work in groups, you can submit a group answer, clearly specifying the members of the group.
(3) Please submit via classroom.
(4) Deadline: June 7th, 1:30PM.

Note: you can find the data for the exercises in Hansen's book here

(Note: Problems 1-3 are those in PS1 that I asked you not to complete last week)

1. Hansen's book, exercise 19.9.

2. Hansen's book, exercise 19.10.

3. Hansen's book, exercise 19.11.

4. Answer the following questions in a concise and clear manner.

a). Recall that in Kernel regression the optimal bandwidth verifies $h^* = O(N^{-0.2})$. Choose instead $h' = O(N^{-0.3})$, explain what this different bandwidth is doing, are you oversmoothing or undersmoothing?

b) Consider now expression (9.24) in CT, what's the limit of the bias term $\sqrt{Nh}b(x_0)$ in this expression if you choose $h' = O(N^{-0.3})$?. Use your conclusions to discuss the benefits (dangers) of oversmoothing/undesmoothing to eliminate the bias in the asymptotic distribution.

c) Explain what trimming is and why it's employed in nonparametric estimation.

d). Explain why oversmoothing can be a good idea if you're estimating marginal effects in a kernel regression (hint: read section 9.5.5. CT)

5. Exercise 20.9, Hansen's book.

6. Exercise 20.15, Hansen's book.

7. Exercise 20.16, Hansen's book.

8. Exercise 20.17, Hansen's book.

9. Using the same data as in the previous exercise, re-estimate models b) and c) using Robinson's semiparametric estimator. Comment on the similarities and differences (if any) with the previous exercise. Use the binsreg command to have a visual inspection of the relationship first.