

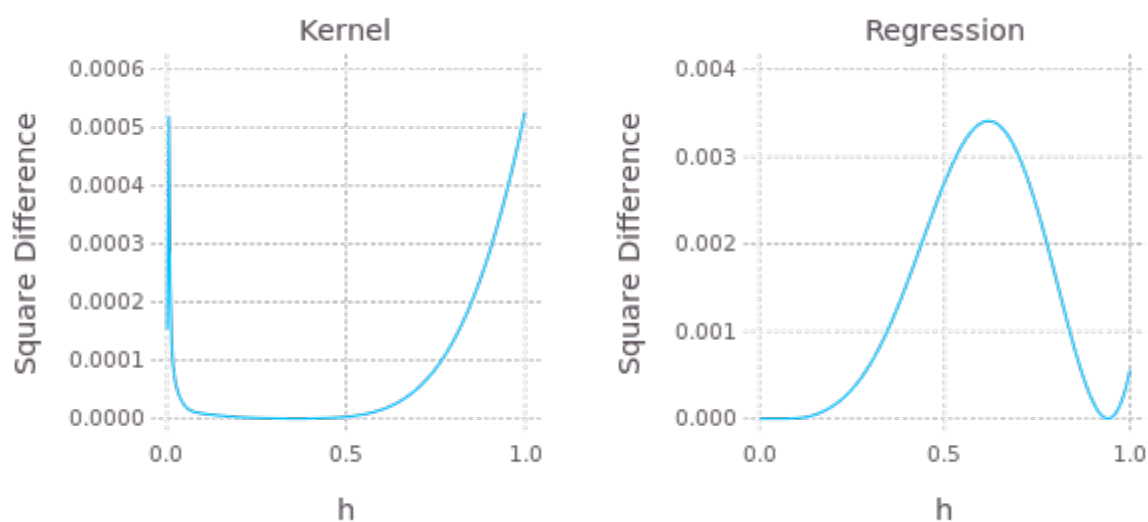
Econometrics: Homework

Caio Figueiredo

October 27, 2019

1 Question 1

In order to save the bootstrap for the next question I decided to estimate this only once, using a high $n = 10000$, the results is as follows.

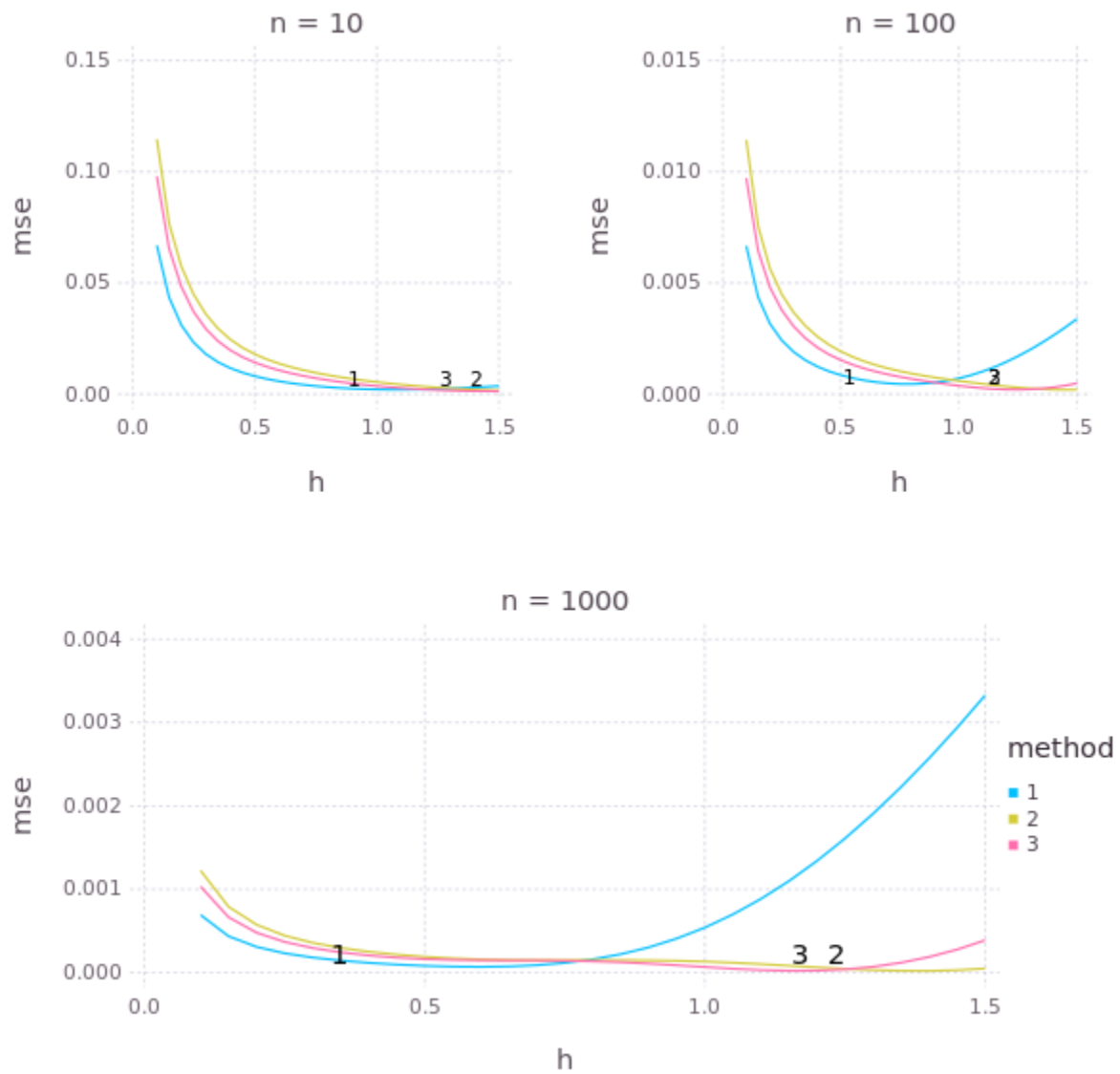


We can see nice that the error of the kernel estimator is very small for very low values of h , but as $h \rightarrow 0$ the estimator goes awry, this also happens although more smoothly as $h \rightarrow \infty$. The same seems to apply for the regression estimator but we can observe a second valley near 1.

2 Question 2

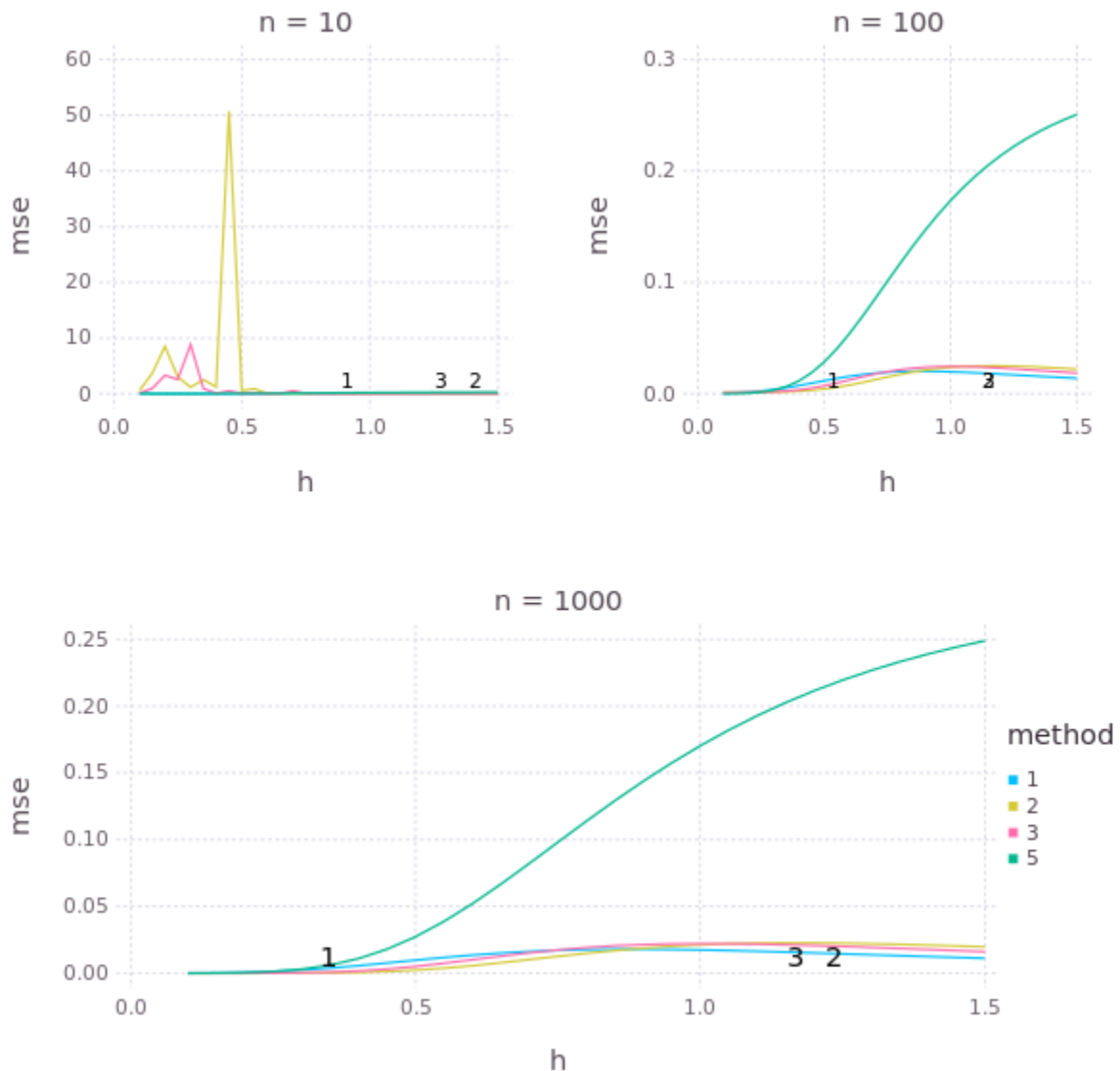
2.1 a

In the following graphs the kernel number 4 will be ignore, since it's MSE is much worse than the others that it undermines readability.



The points 1, 2 and 3 are the suggested value for the bandwidth using the cross validation method for kernel number 1, 2 and 3 respectively. The method does not match the value of h that minimizes the MSE but overall behave really well and stays in a decently close neighborhood of that point.

2.2 b



Here we have a different story, ignoring the case for $n = 10$ where the our estimator does not behave really well the MSE seems to be a increasing function of the bandwidth, that is the lower the MSE the better, which is not at all that intuitive.

Of course because of this the values suggested by the cross validation method does not work well if the regression estimator.

This graph also have an additional line (#5) which reference the local linear estimator, the MSE of this line does not really compare to the other lines since we are estimating different objects but the behavior along h seems to be the same.

3 3