

Assignments #03 of Econometrics II & Advanced Econometrics II (2014SY)

October 15, 2014

Instruction to students

1. Dead line for submission: **October 22, 2014**. Please submit your answer at the end of the class.
2. Use A4 size papers to answer.
3. The answer may be written in Japanese as well as English.
4. **The supplementary note, which can be downloaded from the class web page, is quite helpful. It is highly recommended to read.**

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The following data are the random sample with size 10.

6 11 7 12 5 10 7 9 8 9

Assume that each data x_i ($i = 1, \dots, 10$) follows independently binomial distribution with $n = 20$, $p = 0.4$, i.e. $x_i \sim iid \text{Bin}(20, 0.4)$.

Answer following questions.

- (1) Derive log likelihood function (on parameter p).
- (2) Calculate the ML estimator of p .
- (3) Derive the variance of \hat{p} , the ML estimator of p .
- (4) Calculate parametric bootstrap variance of \hat{p} , when $B = 20$ and $B = 100$.
- (5) Calculate nonparametric bootstrap variance of \hat{p} , when $B = 20$.