

Lab Assignment - 5

Instructor : Dr. Arabin Kumar Dey

1 Due date:

- 27/8/2015 midnight.

2 Notes:

- Submit the codes in all R / S-plus corresponding to the questions.
- Make a proper documentation preferably in latex or using some other software and submit the printout of the report in .pdf form.
- Each student needs to write his/ her own solutions, even though discussions of the assignments between students are encouraged.

3 Assignments:

(a) Consider the daily stock return of the Citigroup (tick symbol C) and the Standard and Poor's 500 Composite index from January 2001 to December 2008. The data are simple returns and in the file d-csp0108.txt (three columns with date, C-rtn, SP-rtn). Calculate the log-returns for both data set.

(i) Is mean different from zero ? Use 95% confidence interval to answer your question. Find out the coverage probability.

(b) Write down the 95% confidence interval (asymptotic) for p based on mle of p where p is the parameter of a bernoulli distribution. Draw $N(= 1000)$ random samples of size 20, 50 and 100 from $\text{bernoulli}(p)$. Find out the coverage probabilities for all sample size based on the confidence interval. Write a program to cross-check whether you are getting an interval outside the parameter space. If yes, modify your confidence interval. Calculate the coverage probabilities. Can we take the same confidence interval truncating from zero ? Justify your answer.