Homework 1 : actual coverage problem

Set a Monte Carlo experiment to understand the coverage of a confidence interval for a proportion

DGP : $y_i \sim Ber(\pi)$ $\quad i = 1, \dots n$

scenarios : $n =$ 50 500 1500

$\pi =$ 0.1 0.5 0.7

(o scegliete voi)

At each iteration $b = 1, \dots B$

(1) genera i dati

(2) Calcola intervallo di confidenza

(3)

$$ris_b = \begin{cases} 1 & \text{if } \pi \text{ in } IC_b \\ 0 & \text{otherwise} \end{cases}$$

→ Actual coverage = prop di volte che ris = 1

Homework 1 : efficiency of $\hat{\sigma}^2$ and s^2

Use Monte Carlo simulations to compare the maximum likelihood estimator of σ^2 and its unbiased version (varianza campionaria corretta)