PS5841

Data Science in Finance & Insurance

Bootstrap

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The Bootstrap

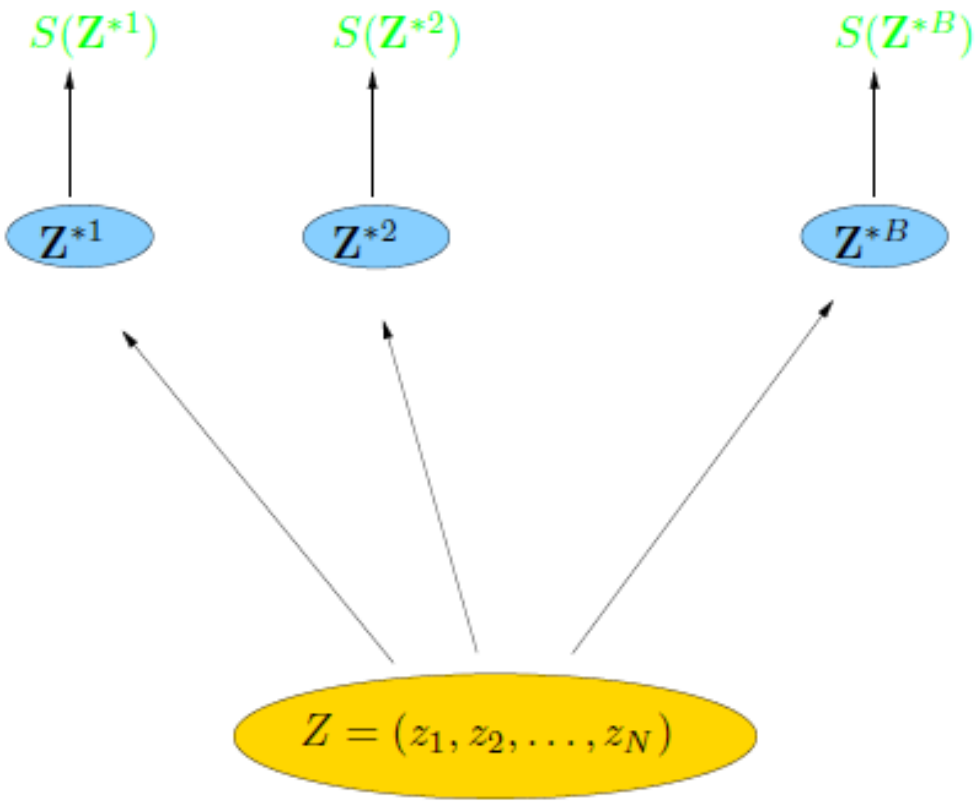
- Emulate the process of obtaining new samples without generating additional samples
- Obtain distinct data sets by repeatedly sampling, with replacement, observations from the original data set
- Works well if the original data set is a good representation of the population
  - Risk of “garbage in, garbage out”

The Bootstrap

quantity of interest

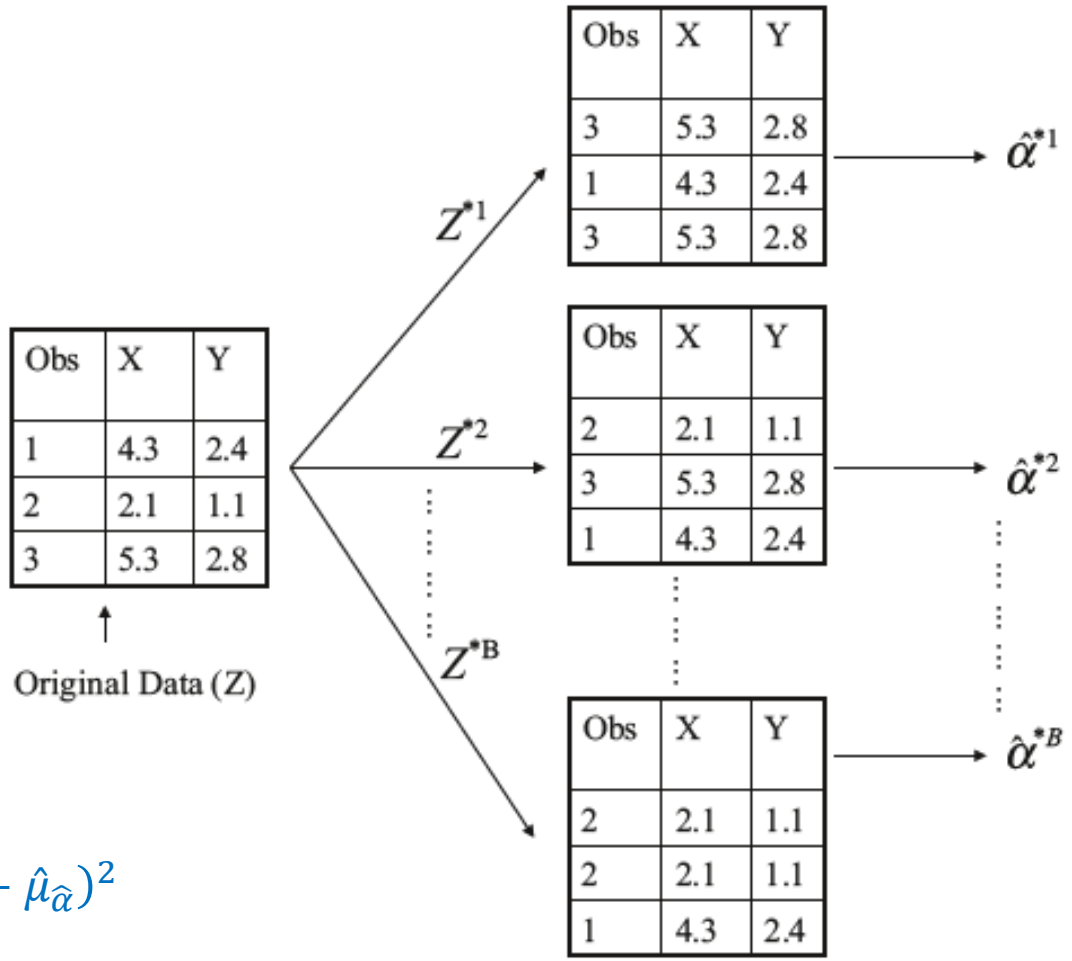
bootstrap data sets

original data set



Bootstrap Data Sets

$$\hat{\mu}_{\hat{\alpha}} = \frac{1}{B}\sum_{r=1}^{B} \hat{\alpha}^{*r}$$



$$\hat{\sigma}^2_{\hat{\alpha}} = \frac{1}{B-1}\sum_{r=1}^{B} (\hat{\alpha}^{*r} - \hat{\mu}_{\hat{\alpha}})^2$$

That was