Lecture 5

We now know how to get estimates for a, b in the two competing models.

But these are estimates. How to gauge the variability of these estimates?

Answer: parametric bootstrapping.

idea - use Monte Carlo simulation to construct sampling distribution for our parameter estimates $\hat{a}, \hat{b}$

Let $\hat{a}_i^b$ = bootstrap parameter estimate for a (i^{th}) $\quad (i = 1, 2, \cdots, N)$

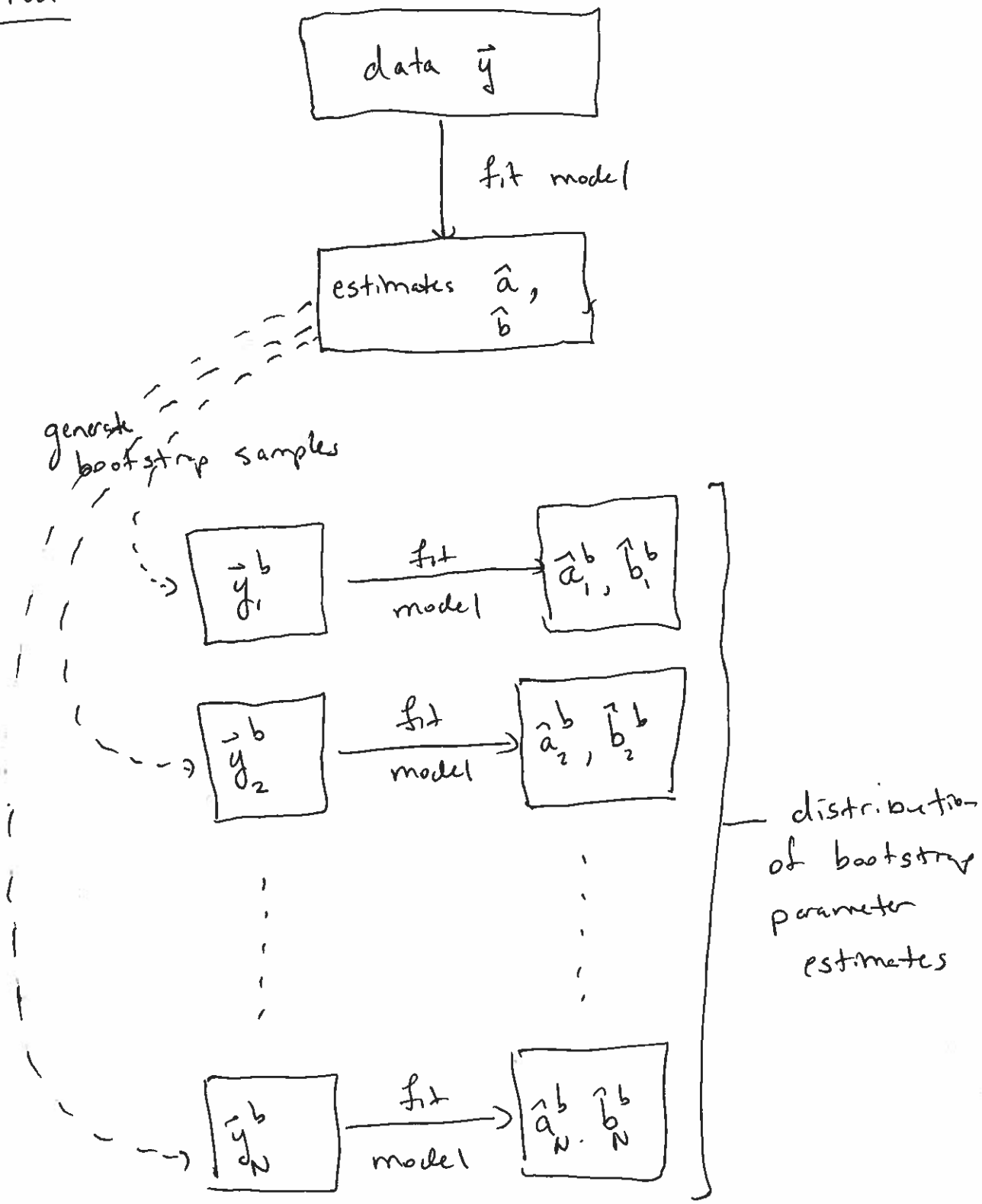
A_N = distribution of bootstrap samples $\hat{a}_i^b$

A = "true" distribution of parameters a from samples.

Then $A_N \longrightarrow A$ as $N \longrightarrow \infty$

bootstrap principle.

Method:


data $\vec{y}$
fit model
estimates $\hat{a}$, $\hat{b}$
generate bootstrap samples
$\vec{y}_1^b$
fit model
$\hat{a}_1^b$, $\hat{b}_1^b$
$\vec{y}_2^b$
fit model
$\hat{a}_2^b$, $\hat{b}_2^b$
$\vec{y}_N^b$
fit model
$\hat{a}_N^b$, $\hat{b}_N^b$
distribution of bootstrap parameter estimates