Econometrics
Bootstrap

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The Bootstrap Idea

- ▶ Used when analytical standard errors are unknown, e.g. in small random samples

- ▶ Idea:
    - ▶ Treat observed sample as the population...
    - ▶ and draw M samples from it to estimate the sampling distribution

- ▶ Usually, bootstrap samples are drawn with replacement and are of site N, i.e. the actual sample size

How-to

Cross-sectional i , $y_i = x_i'\beta + \varepsilon_i$.

1. Sample with replacement in pairs (y, x).
2. Compute sample statistics.
3. Repeat 1. and 2. many times
   - heteteroskedasticity-robust

Time Series:
Re-sampling observation by observation scrambles the relationship between adjacent error terms.

Panel Data:
Re-sample clusters (i.e. cross-sectional units) so that correlation within these units are preserved.