

Econometrics 2 (Fall 2020)

Homework 8: Bootstrap.

Due Wednesday on Nov. 5, 2020.

This code estimates the model

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + u ,$$

with u is i.i.d. and can be drawn from the normal distribution with mean 0 and variance σ^2 . The OLS standard errors and (non-parametric) bootstrap standard errors are computed.

Set the parameters.

There are 200 simulations with 1000 observations per simulation and 200 bootstrap replications per simulation.

Set $\beta_0 = 0.4$, $\beta_1 = 0.5$, $\beta_2 = 0.3$ and $\sigma = 2$.

Estimation.

In each simulation, generate the data, X_1 and X_2 , then draw the error terms, U , and construct Y . Estimate the model using OLS and record the estimates. Compute the OLS standard errors and (non-parametric) bootstrap standard errors and record these.

Empirical results.

The average and standard deviation (in parenthesis) of β_0 estimated by OLS and the average standard errors (OLS and non-parametric boots) are:

The average and standard deviation (in parenthesis) of β_1 estimated by OLS and the average standard errors (OLS and non-parametric boots) are:

The average and standard deviation (in parenthesis) of β_2 estimated by OLS and the average standard errors (OLS and non-parametric boots) are: