ECON832 Assignment 3: Report

Mar 08, 2024

Problem 2: Bootstrap Standard Errors of the Supply and Demand Model

In this problem, we are interested in estimating the standard errors of the β coefficient in the supply and demand model using the bootstrap method. I estimated the true elasticity of demand, b, by performing 2SLS estimation through an `Ipopt` optimizer in Problem Set 1.

```
include("../problem_set_1_supply_and_demand.jl")
```

```
The estimated elasticity of demand is-0.55880374126099.
```

For the estimation of bootstrap standard errors, I redefined my supply and demand model as a function and then used the `pmap` function and the `Distributed` library to perform the bootstrapping.

```
using Distributed
using Optim
using DataFrames

addprocs(4)

@everywhere include("../problem_set_3_corrected_bootstrap_functions.jl")

B = 10000 # Total number of bootstrap samples

beta_samples_pmap = pmap(bootstrap_sample, [df for _ in 1:B])

beta_samples_pmap = beta_samples_pmap ./ 0.5
```

```
std_errors = std(beta_samples_pmap)
```

The bootstrap standard error for β/b is 0.14124134.