Data Science for Economists - Spring 21

Problem Set 8

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1. Done
2. Done
3. Done
4. Done
5. The estimated value, $\hat{\beta}_{OLS}$ is quite similar to the true value of β. In fact it is exactly the same if we round $\hat{\beta}_{OLS}$ off to 2 decimal places.
6. Done
7. Yes. The values for both estimates are different. The $\hat{\beta}_{OLS}$ using `nloptr`'s L-BFGS algorithm is pretty close to the true β.
8. Done

9. These estimates of β using `lm()` are pretty close to the "ground truth" β that we used to create the data in (1). To be precise they are exactly the same when rounded off to 1 decimal place.

	Model 1
X1	1.501
	(0.002)
X2	-0.991
	(0.003)
X3	-0.247
	(0.003)
X4	0.744
	(0.003)
X5	3.504
	(0.003)
X6	-1.999
	(0.003)
X7	0.502
	(0.003)
X8	0.997
	(0.003)
X9	1.256
	(0.003)
X10	1.999
	(0.003)
Num.Obs.	1e+05
R2	0.971
R2 Adj.	0.971
AIC	144993.2
BIC	145097.9
Log.Lik.	-72485.615
F	338240.012