PS8_RYU

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1 Q5.

Very little difference. Rounding up to the decimal point yields a nearly identical value.

2 Q7.

Very similar, but not completely identical, values were derived.

<Result of Computing beta_hat_OLS using nloptr's L-BFGS algorithm>
- Optimal value of objective function: 24990.8396899258
- Optimal value of controls: 1.501052 -1.00083 -0.251648 0.7490406 3.500553 -2.000819 0.4987148 1.002827 1.24651 2.001001

<Result of Computing beta_hat_OLS using Nelder-Mead algorithm>
- Current value of objective function: 24992.0556652445
- Current value of controls: 1.500973 -0.9984383 -0.2511872 0.7477687 3.499967 -2.001487 0.4983476 1.001078 1.246084 2.00035

3 Q8.

The true value of beta is 1.5, 1, 0.25, 0.75, 3.5, 2, 0.5, 1, 1.25, 2.

And the estimate of the beta hat is 1.501, -1.001, -0.252, 0.749, 3.501, -2.001, 0.499, 1.003, 1.247, 2.001.

OLS estimation gives a similar and identical value compared to the true beta value.

Table 1: Regression Table

	OLS ESTIMATION
X1	1.501***
	(0.002)
X2	-1.001***
	(0.002)
X3	-0.252***
	(0.002)
X4	0.749***
	(0.002)
X5	3.501***
	(0.002)
X6	-2.001***
	(0.002)
X7	0.499***
	(0.002)
X8	1.003***
	(0.002)
X9	1.247***
	(0.002)
X10	2.001***
	(0.002)
Num.Obs.	100000
R2	0.991
R2 Adj.	0.991
AIC	145143.6
BIC	145248.3
Log.Lik.	-72560.811
RMSE	0.50

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$