PS 8

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True beta: 1.5, -1, -.25, .75, 3.5, -2, .5, 1, 1.25, 2

1 Part 5

0.77480798
0.49631902
0.51529149
0.60010953
0.70913307
0.96689101
0.31334104
0.03613044
0.62443712
0.85853552

These numbers are within the range of true beta, but are very centered within 0 to 1, and therefore are not a good reflection.

2 Part 6

[1] "The minimum of f(beta,Y,X) is 0.774807975493321"
[2] "The minimum of f(beta,Y,X) is 0.496318913121644"
[3] "The minimum of f(beta,Y,X) is 0.515291455510075"
[4] "The minimum of f(beta,Y,X) is 0.600109530781268"
[5] "The minimum of f(beta,Y,X) is 0.709133235430076"
[6] "The minimum of f(beta,Y,X) is 0.966890850499107"
[7] "The minimum of f(beta,Y,X) is 0.313341072858513"
[8] "The minimum of f(beta,Y,X) is 0.0361304989593428"
[9] "The minimum of f(beta,Y,X) is 0.624437148940285"
[10] "The minimum of f(beta,Y,X) is 0.858535580804735"

Here, the returns are identical to part 5, and therefore also are not a good reflection of beta.

3   Part 7

Optimal value of objective function: -6.54296875

Optimal value of controls: 2.25

Here with the optimization, I had trouble with my code a little bit for the BLFGS.

4   Part 8

0.03613, 0.62444, 0.85854

5   Part 9

These numbers are in line with parts 5 and 6. They do not reflect are true beta vector, but they do land within the vector (very close to the mean). This gives me the notion that OLS for a simple linear regression plays it safe and keeps answers within one deviation of the mean.

Table 1:

	Dependent variable:
	Y
X1	0.775***
	(0.002)
X2	0.496***
	(0.003)
X3	0.515***
	(0.003)
X4	0.600***
	(0.003)
X5	0.709***
	(0.003)
X6	0.967***
	(0.003)
X7	0.313***
	(0.003)
X8	0.036***
	(0.003)
X9	0.624***
	(0.003)
X10	0.859***
	(0.003)
Observations	100,000
R^2	0.856
Adjusted R^2	0.856
Residual Std. Error	0.500 (df = 99990)
F Statistic	59,605.040*** (df = 10; 99990)
Note:	*p<0.1; **p<0.05; ***p<0.01