PS8 Holt

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1 Introduction

Here we go through several different regression tests for the beta variable. The initial created matrix is shown below.

Table 1:

1.501
-0.991
-0.247
0.744
3.504
-1.999
0.502
0.997
1.256
1.999

Using the OLS estimate, the comparison is accurate with the true values.

Table 2:

1.501	-0.991	-0.247	0.744	3.504	-1.999	0.502	0.997	1.256	1.999

The gradient descent method is also used below.

Table 3:

1.501	-0.991	-0.247	0.744	3.504	-1.999	0.502	0.997	1.256	1.999

We can then do the regression estimate with the LBFGS method and the Nelder Mead method. The Nelder Mead is far less accurate than the LBFGS method.

Table 4:

1.462	-0.977	-0.234	0.775	3.507	-1.971	0.537	0.971	1.243	2.002	

Table 5:

1.501	-0.991	-0.247	0.744	3.504	-1.999	0.502	0.997	1.256	1.999	-0.500

The MLE estimate:

Table 6:

	Dependent variable:
	y
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)
Observations	100,000
R^2	0.971
Adjusted R^2	0.971
Residual Std. Error	0.500 (df = 99990)
F Statistic	338,240.000*** (df = 10; 99990)

Note: *p<0.1; **p<0.05; ***p<0.01