

Bus 274: Further Statistics for Business

Spring 2010

PROBLEM SHEET # 12

Problem: Let variables be defined as follows:

xom.ret = weekly return on Exxon Mobil stock,
 nya.ret = weekly return on the NYSE Composite index,
 wti.ret = weekly return on WTI crude oil.

Returns, i.e. price changes, are given as percent changes w.r.t. the previous week.

A regression model with xom.ret as dependent variable and nya.ret and wti.ret as independent variables was fitted to data from 125 weeks (January 2006 through May 2008). A part of the resulting computer output is:

Regression Statistics					
Multiple R	0.79				
R Square	0.62	Intercept	0.16	0.15	1.10
Adjusted R Square	0.62	nya.ret	0.89	0.08	11.45
Standard Error	1.64	wti.ret	0.23	0.04	6.48
Observations	125				P-value
					0.27
					0
					0

- Write down the estimated regression equation.
- According to the computer output: Why is it appropriate to include wti.ret as independent variable?
- Explain the meaning of R Square in this example.
- Assume that this week's price of a share of Exxon Mobil stock is USD 90. Suppose that next week the price of a barrel of WTI crude oil will increase by 4.2%, while NYSE Composite does not change. Using the model, compute a point prediction for next week's Exxon mobile stock price. (Reminder: The regression model is a model for *returns in percent*.)
- For each week, we can determine whether a return was positive. This leads to the following 2×2 tables:

		nya.ret > 0?				wti.ret > 0?	
		N	Y			N	Y
xom.ret > 0?	N	32	16	xom.ret > 0?	N	33	15
	Y	18	59		Y	21	56

Compute the odds ratios. Are they in line with the sign of the coefficients of the regression? Is the direction significant?

- Suppose that the dataset used for fitting the model is given in a spreadsheet file, in the following format:

	A	B	C	D
1	date	xom.ret	nya.ret	wti.ret
2	2006-01-03	4.659	1.861	8.511
3	2006-01-10	2.378	1.494	0.475
4	2006-01-17	2.794	-0.473	4.652
5	2006-01-24	-0.934	-0.245	0.708
⋮	⋮	⋮	⋮	⋮
125	2008-05-13	0.011	-1.057	3.291
126	2008-05-20	5.442	1.334	2.464

Describe how you can produce the estimation output given above using Excel. (Which boxes do you open, etc.? Please give some details.)