ECOM073: Topics in Financial Econometrics

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http://faculty.chicagogsb.edu/ruey.tsay/teaching/fts2/
here you can find various data sets.

Exercise 2.

2.1. In **d-ibm3dx7008.txt** you will find the daily simple stock returns of IBM for the period 1970.01.02 to 2008.12.31.

(a) compute the histogram, sample mean, standard deviation, skewness, excess kurtosis, minimum, and maximum of the returns of this stock.

(b) Discuss the summary characteristics of these returns. In particular, conduct test to clarity the following questions and comment on your findings:

(i) is the mean significant?
(ii) is the skewness equal to 0?
(iii) is the excess kurtosis equal to 0?
(iv) is the distribution of the returns normal? (Use Jargue-Bera test).

(c) Together with the histogram plot the probability density of the normal distribution which mean and standard deviation are equal to the sample mean and the sample standard deviation of your data. Comment on your finding.

(d) Assuming that the given returns are log returns, compute the aggregated return for the period 1970.01.02 to 2008.12.31. Comment on your finding.

2.2. In d-3stock.txt you will find the daily stock returns of American Express (axp), Caterpilar (cat) and Starbucks (sbux) for the period 1994.01.03 to 2003.12.32.

(a) Compute the sample mean, standard deviation, skewness, excess kurtosis, minimum, and maximum of the returns of each stock.

(b) Discuss the summary characteristics characteristics of these returns. In particular, focuss on the following questions:
   (i) is the mean significant?
   (ii) is the skewness equal to 0?
   (iii) is the excess kurtosis equal to 0?

Based on these characteristics what can you say about differences/ similarities between American Express (axp), Caterpilar (cat) and Starbucks (sbux) daily stock returns?
   Are these stock returns normally distributed?

(c) Assuming the returns are log returns, compute the aggregated return for the period 1994.01.03 to 2003.12.32.

2.3. Using summary statistics from table 1.2, test for significance of the mean, skewness and access kurtosis for the Microsoft daily and monthly log-returns.
   Are these stock returns normally distributed? Comment on your findings.

TABLE 1.2 Descriptive Statistics for Daily and Monthly Simple and Log Returns of Selected Indexes and Stocks[a]

Security	Start	Size	Mean	Standard Deviation	Skewness	Excess Kurtosis	Minimum	Maximum
				Daily Log Returns (%)				
SP	70/01/02	9845	0.023	1.062	−1.17	30.20	−22.90	10.96
VW	70/01/02	9845	0.035	1.008	−0.94	21.56	−18.80	10.90
EW	70/01/02	9845	0.072	0.816	−1.00	17.76	−10.97	10.20
IBM	70/01/02	9845	0.026	1.694	−0.27	12.17	−26.09	12.37
Intel	72/12/15	9096	0.066	2.905	−0.54	7.81	−35.06	23.41
3M	70/01/02	9845	0.034	1.488	−0.78	20.57	−30.08	10.92
Microsoft	86/03/14	5752	0.095	2.369	−0.63	14.23	−35.83	17.87
Citi-Grp.	86/10/30	5592	0.033	2.575	0.22	33.19	−30.66	45.63
				Monthly Log Returns (%)				
SP	26/01	996	0.43	5.54	−0.52	7.93	−35.58	35.22
VW	26/01	996	0.74	5.43	−0.58	6.85	−34.22	32.47
EW	26/01	996	0.96	7.14	0.25	8.55	−37.51	51.04
IBM	26/01	996	1.09	7.03	−0.07	2.62	−30.37	38.57
Intel	73/01	432	1.39	12.80	−0.55	3.06	−59.54	48.55
3M	46/02	755	1.03	6.37	−0.08	1.25	−32.61	22.95
Microsoft	86/04	273	2.01	10.66	0.10	1.59	−42.09	41.58
Citi-Grp	86/11	266	0.68	10.09	−1.09	3.76	−49.87	23.18