APPLIED STATISTICS FOR FINANCE & ECONOMICS (L1064) – 2015

PROJECT REPORT

The report should be **2,000** words in length and must be word-processed. Projects that exceed this word limit will be penalised.

Candidates must respect the following formatting requirements:
Paper size: A4
Body: Font Arial, size 11; 1.15 line spacing
Margins: Top, bottom, left and right margins of 2cm
You can use the Project Report Template on Study Direct. Add your candidate number on the first page and start writing the project on the second page. You can decide how to structure the project with headings and subheadings.

All data analysis will be undertaken in STATA. The STATA datasets for this project are available on Study Direct. Please consult the table below to see which project you have been assigned.
Each assigned dataset contains four variables. These are the end-of-week share price for a particular stock (y), the end-of-week value for the Standard & Poor 500 index (sap), a binary variable ('time_dum') equal to 1 if the data relate to the last half of observations in the series and zero otherwise, and a variable (newt) that denotes the frequency of the data.

1. Declare your data as time series.
2. Generate the log of the variables y ('ly') and sap ('lsap').
3. Generate the log returns of the variables y ('dly') and sap ('dlsap').
4. Setting out the issues clearly and use descriptive techniques (mean, standard deviation, median, percentiles) and graphs (boxplot, kernel plot, P-P plot, time series plot) to describe the main properties of the two log return series.
5. Conduct a series of normality tests for both these log return series, taking into consideration the possible effect of outliers analysed in the previous point.
6. Test whether there are statistically significant mean differences in the log returns between the y stock and the S&P.
7. Test whether the log returns for the stock series are more volatile than the S&P 500 series.
8. Test whether there are statistically significant mean differences in the log returns for the y stock between the first half and the second-half of the sample.
9. Test whether the log returns for the stock series are more volatile than the S&P 500 series between the first half and the second-half of the sample.
10. Test whether there are statistically significant median differences in the log returns for the y stock between the first half and the second-half of the sample.
11. Test whether the time series sequence of log returns for the y stock are random or not.
12. Estimate a simple Capital Asset Pricing Model (CAPM). This involves the Ordinary Least Squares Estimation (OLS) of the following regression model:

$$dly_t = \alpha + \beta dlsap_t + u_t \qquad (1)$$

13. Evaluate and interpret the estimates of this regression model.
14. Comment of the overall goodness of the model.

15. Test a relevant proposition regarding the β value. Interpret the result.
16. Estimate the model under the assumption that the intercept is zero. Does the estimate of the stock's beta change much?
17. Is the beta coefficient stable over time? Estimate a separate model, with and without intercept, for each sub-sample period. How do you interpret the results?

    Report the estimation results for the CAPM Model of points 16 and 17 in a table like this:

		intercept	**beta**
StartingYearWeek - FinalYearWeek	(i)		
	(ii)		
StartingYearWeek - LastHalfYearWeek	(i)		
	(ii)		
SeconHalfYearWeek - FinalYearWeek	(i)		
	(ii)		

Standard errors are reported in parentheses.
Model (i) contains an intercept.
Model (ii) excludes the intercept.

To complete the above table, the green cells should contain the parameter estimate. The estimated standard error should be reported in parentheses below the parameter estimate. Round the results to a form that is appropriate for report presentation.

For example, the first row of the table can be displayed as:

		intercept	**beta**
2002w5 – 2006w48	(i)	0.0042 (0.0064)	0.92 (0.16)

18. Inspect graphically whether the residuals of the regression model satisfy the properties of the residuals.
19. Formally test for properties of the residuals.

The exercise should be treated as an exercise in report writing, not just a statistical exercise. You should pay a good deal of attention to structure and to ensuring that the main results from the exercise are clearly reported. A report that neglects the issues and just goes through statistical techniques in a mechanical manner will be penalised. You therefore need to think clearly about the issues that you are examining and layout your hypotheses and findings carefully.

You should describe the statistical methods you use and explain your choice of methods, which could be both parametric and non-parametric. You should state precisely the hypothesis under test in each case, and clearly interpret the results that you find and the implications of your findings.

Please note that you have to include in your report graphs and tables (they do not count for number of words). It is your choice whether to insert them within the report or in the appendix. In any case you have to clearly present tables and graphs, with appropriate labels and full explanations. Tables and Graphs should be numbered with self-explanatory headings. Rows and columns and graph axes must be labelled.
You have also to add an appendix with a Do-file and a log-file which do not count for the number of words.

Marks will be lost for poor spelling and grammar, and for poorly presented work.

Collaboration and group work are NOT permitted on this project!

Deadline for Submission

4:00pm Thursday Week 12

There are penalties for late submission, which are set out in the *Handbook for Candidates.*

Dataset Assignments:

Candidate	Dataset Number	Stock y
Agkyridi, Dafni	1	3M
Ahmed, Gulam R	2	ABT
Al-Angary, Faisal	3	ACE
Alarnous, Naief	4	ADBE
Ashmore, Chloe	5	AES
Bache, Alexander	6	AET
Badakhshan, SHAHRIAR (Sharry)	7	AFL
Barnett, James	8	AKAM
Bramwell, Robert	9	AMD
Budd, Oliver G	10	ANF
Bui, Khanh Ha	11	BBBY
Chan, Chung	12	BBT
Chew, Chen Hong Calvin	13	BCR
Chirila, Gabriela	14	BDX
Connolly, Alasdair	15	BHI
Cui, Yuan	16	BIG
Dada, Omolayo	17	BK
Davies, Harry	18	BLL
Du, Fan	19	BMS
Dunne, Liam	20	CA
Eastick, Annabel R	21	CAH
Efstathiou, Michael	22	CAM
Esam, Ahmad	23	CFN
Fakhretdinova, Elizaveta	24	COF
Freestone, Jack	25	COG
Friary, Amy-Jane	26	CPB
George, Ashton	27	DELL
Goldring, James	28	DHI
Green, Alexander	29	DNR
Green, Jessica A	30	DPS
Ho, Chuen Kei	31	DRI
Howarth-Bloore, Samuel	32	DTV
Hu, Sizheng	33	DVA
Hui, Shun Y	34	EBAY
Huo, Shuge	35	ECL
Ji, Zhaokai	36	EIX
Jiang, Shanshan	37	EK
Jin, Hui	38	EP
Johnstone, Ross	39	ERTS
Karimian, Sima	40	FAST
Keys, Matthew	41	FDO
Koursaros, Giorgos	42	FDX

Kuzmenko, Nataliia	43	FE
Lawrence, James A	44	FII
Lewis, Orlando W	45	FIS
Li, Dongshen	46	FTI
Li, Jingshu	47	S
Lin, Hongwei	48	SAI
Lin, Rulan	49	SBUX
Lind, Kieran	50	SCG
Liu, Bang	51	SE
Magntorn, Julia	52	SEE
Muortat, Aru	53	SHLD
O'Brien, Tom	54	SIAL
Odigbo, Kelechi O	55	SJM
Presles, Raphael	56	SLB
Qian, Yizhou	57	SLE
Ready, Joseph	58	SLM
Roberts, Alexander	59	SNA
Samara, Aikaterini	60	SNDL
Soper, Luke	61	SNI
Spanos, Savva P	62	SO
Steckelmacher, Lewis W	63	SPG
Sun, Shuying	64	SPLS
Tudor, Sam	65	SRCL
Umaichelvam, Indresh	66	SRE
Vu, Jason	67	STI
Willis, George	68	STJ
Xie, Yihua	69	STT
Yeh, Pin-Chian	70	SUN
Yu, Yang	71	SVU
Zeng, Jing	72	SWH
Zhou, Lan	73	SWK