

Uva Wellassa University

Faculty of Management

Bachelor of Business Management in Entrepreneurship and Management

3rd YEAR 1st SEMESTER EXAMINATION – FEBRUARY/MARCH 2011

EMG 304 -2 Research Methodology



Instructions to candidates

- No. of pages : Three (03)
 - No. of questions : Four (04) Essay
 - Time : One (01) Hour
 - Marks allocated : 50 Marks
- Answer all questions**

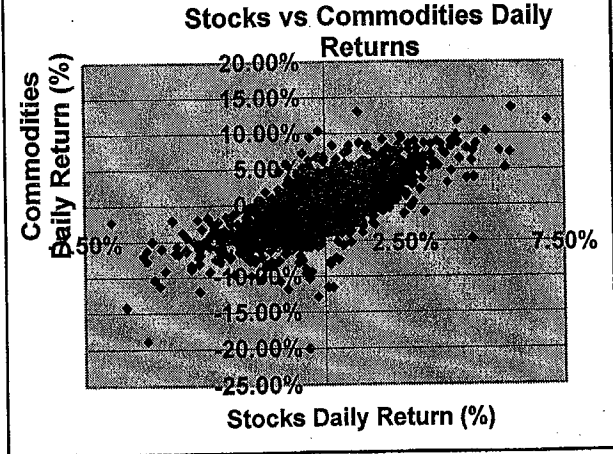
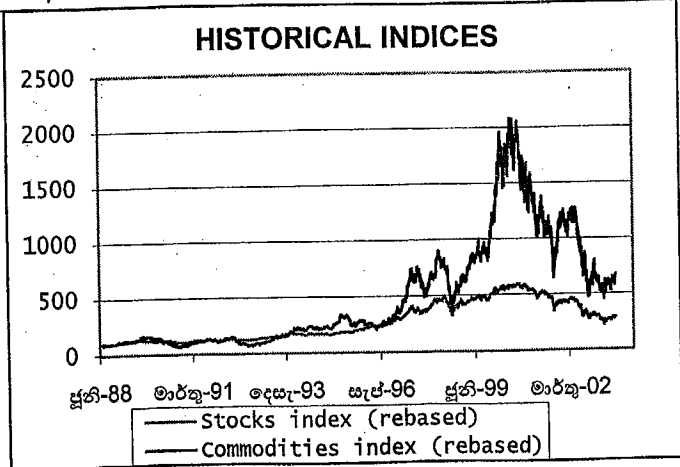
Index No:

Part C: Essay Questions

1. They are considering offering equity-linked policies. They have identified two indices that are prepared to use and need a thorough comparison of their historical data as well as a simple method to simulate these indices. The purpose of project is to analyze historical index data in respect of two market indices: Stocks and Commodities and simulate future index return paths for these two indices, using normal distribution random variables. He runs the following graphs and summary data to achieve their task. The company does not have more idea to interpret those results. They are seeking your support to interpret following results in correct manner.

Graph 01: Historical daily data on the two indices was provided from 15 July 1988 and this was rebased for each index to start from 100 at that date

Graph 02: Comparison between Stocks daily returns Vs Commodities Daily Returns



Index returns

Geometric daily returns were calculated on each index, using the approach:

$$\text{Index return for Day X} = \text{LN} (\text{Index on Day X} / \text{Index on Day X-1})$$

Assumption: the index relates to prices as at the end of each day.

Note: around non-trading periods, the index on the previously available date was used rather than Day X-1.

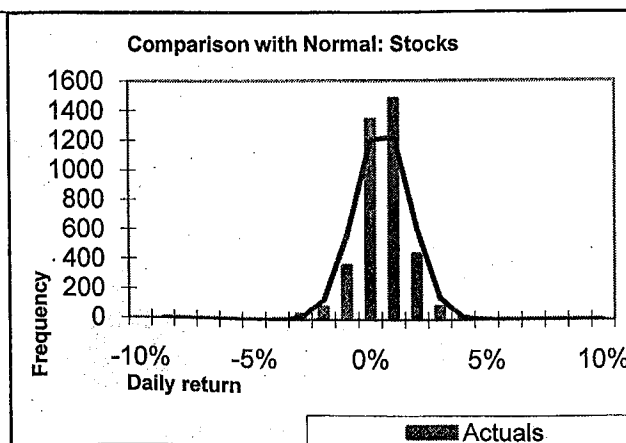
Table 01: Summary statistics for the daily returns on the two indices

STATISTICS	Stocks	Commodities
Mean	0.03%	0.05%
Standard deviation	1.14%	2.61%
Variance	1.30%%	6.83%%
Skewness	-0.244	-0.264
Kurtosis	4.102	4.312
Correlation coefficient between stocks and returns = 0.669		

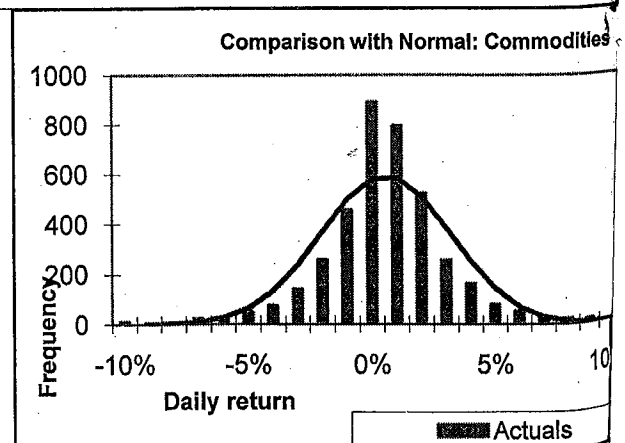
Comparison with Normal Distribution

- The frequency of each observed daily return was determined in 1% steps for each index, in the range -10% to +10%. A small number of outliers for Commodities were therefore omitted.
- The expected frequency of each daily return was also determined, assuming that the returns were normally distributed and have the same mean and variance as each set of actual observations.
- The actual and normalized results were then compared:

Graph 03: Histogram of Stocks daily returns with normal curve



Graph 04: Histogram of Commodities daily returns with normal curve



Simulations

Using the normal distribution and the Box-Muller approach to perform 100 simulations of an additional year of returns gives the following:

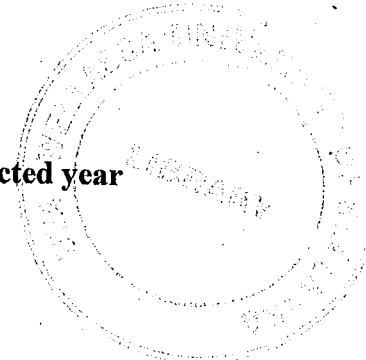


Table 02: Statistical analysis of simulated index prices at end of projected year

Statistics	Stocks	Commodities
Mean	312.9	9 838.37
Standard deviation	63.94	352.09
Skewness	0.99	0.68
Kurtosis	2.26	-0.18
Minimum	168.12	204.60
Lower Quartile	269.14	551.15
Upper Quartile	311.28	758.88
Maximum	570.18	1794.14

Write an analytical paragraph based on above analysis which should include answers to the following questions.

- i. Comment each and every graph and table separately.
- ii. Suggest, your overall conclusion regarding above analysis.
- iii. Make your future suggestion.

(20 marks)

2.

- i. Describe main dimensions of research in briefly.
- ii. What is the deductive reasoning? How it deviate from Inductive Reasoning?
- iii. What are the main elements of Scientific Method? Describe in critically.

(15 marks)

3. What is the significance of a research proposal? Explain the points considered in preparing a research proposal with an example on **“How households characteristics that influence demand on life insurance”**.

(15 marks)

4. Cluster sampling vs. Stratified Sampling

- i. Recognize examples of each sampling technique
- ii. Know that stratification samples some from each group, while cluster samples some of the groups.
- iii. Know that, compared to simple random sample; cluster samples have higher errors while stratified samples have lower errors. Have some basic understanding of why this is true.

(15 marks)