



Uva Wellassa University
Faculty of Animal Science & Export Agriculture
BSc in Export Agriculture



End Semester Examination August / September 2014
Year III Semester II

Econometrics EAG 330 -2

Instructions

Answer **all** the questions

No. of questions : Five (05)
No. of pages : Five (05)
Time : Two hours (02 hrs)
Total marks allocated : 100%

Question 01

I. Define the following econometric concepts.

- a. Panel data
- b. Alternative Hypothesis
- c. OLS Estimation
- d. Error Term
- e. Multicollinearity

(15 marks)

II. Briefly explain why dummy variables are utilized in most of econometric models.

(05 marks)

Question 02

- I. A researcher obtained the following ordinary least squares (OLS) estimates for a Amazon company's stock price using 120 observations from 1980 to 1989 (All variables in logarithms):

$$\ln S = 0.87 - 0.54 \ln P + 0.65 \ln Y + 0.34 \ln R - 0.32 \ln M$$

(1.06) (0.24) (0.30) (0.12) (0.24)

$$\bar{R}^2 = 0.34, \text{RSS} = 1.24$$

S is the stock price, P is the profit, Y is the output of the Amazon Company, R is the expenditure on research and development and M is the expenditure on Marketing. Figures in parentheses are standard errors and RSS is the Residual Sum of Squares.

- a. What is the explanatory power of the regression? (04 marks)
- b. According to the above results, what factors significantly determine the stock price of Amazon Company? (06 marks)
- c. Discuss the impact of profit on stock price of the company based on regression results. (04 marks)

- II. Consider the simple model for consumption function

$$\text{Consumption function } C = a + b Y_t + u_t$$

$$[1] 0 < b < 1$$

Where C = consumption expenditure, Y = income and u is a stochastic error term and a and b are parameters.

A researcher got a large error term in the econometric estimation of this consumption function, Give the reasons. (06 marks)

Question 03

- I. There are 250 employees in a factory. The table shows the number of each type of employees in the factory.

Managers	Craftsmen	Labourers	Administrators
25	130	54	41

A researcher wants to draw a sample of 40 employees which represents 04 types of employees.

Describe a suitable method to draw this sample. (06 marks)

- II. Suppose a group of measurements of productivity in 24 different manufacturing plants was as follows.

20 50 30 30 30 70 30 50 30 40 30 30
40 30 30 50 20 30 20 50 40 40 50 30

- Construct a stem & leaf plot of this list. (05 marks)
- What is the inter quartile range (IQR)? (05 marks)
- Test whether there are outliers in the series of data. (04 marks)



Question 04

An estate agent has asked you to assist him in building a model to explain house prices in his area, so that he may more accurately predict the value of the individual houses that his company has on its books.

He has provided you with a database containing observations on the 546 houses sold by the company during the last year, giving information on the selling price in thousands of pounds (Y), together with a number of other variables describing characteristics of the houses; size of the plot in square feet (X1), the number of bedrooms (X2) and the number of bathrooms (X3).

You first estimate a model which just includes the three X variables described above. The estimation results are as follows.

Dependent variable: Y
Number of observations: 500

Variable	Coefficient	Std Err	t ratio	P value	Lower 95%	Upper 95%
Intercept	-3359.7	388.74	-0.8643	0.38787	-10997	4278.1
X1	5.52059	0.40069	13.778	8.5E-37	4.73334	6.30784
X2	6022.6	1235.8	4.87342	1.5E-06	3594.54	8450.65
X3	19097.9	1876	10.1801	3.1E-22	15412.1	22783.8

SEE = 19161.5 $R^2 = .48527$ Adjusted $R^2 = .48226$ $F(3, 496) = 155.936 (3.3 E-71)$

- I. Using these results, provide a detailed explanation on determinants of house price in this area. (10 marks)
- II. The estate agent notes that the three X variables used in this model are all quantitative in nature, but that many of the characteristics in his database are qualitative.
Eg: whether or not the house has a garage, nice view, double glazing etc.

a. How to include these qualitative variables into the model? Explain. (06 marks)

b. Rewrite a model to explain house price in the area. (04 marks)

Question 05

Briefly explain the suitable statistical tests that are required to achieve the following objectives.

- I. To identify the relationship between libraries used hours and GPA of undergraduates.
- II. To identify the outliers in a data set.
- III. To compare the average yield of two farmer groups.
- IV. To analyze the impact of "Irrigation Water Policy" on water conflicts in Mahaweli area.
- V. To identify the determinants of Technical Efficiency of paddy farmers in minor irrigation schemes.
- VI. To identify the factors affecting for adoption of HACCP meta-system by food processing factories.
- VII. To identify the relationship between gender and smoking.
- VIII. To identify the determinants of poverty in the estate sector of Sri Lanka.

(2.5 marks × 8)

