MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2014/2015

FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF ARTS IN ECONOMICS AND BACHELOR OF SCIENCE IN MATHEMATICS & ECONOMICS WITH INFORMATION TECHNOLOGY

CITY CAMPUS

SUPPLEMENTARY

AEC 411: ELEMENTARY ECONOMETRICS

Date: 14th November, 2015 Time: 2.30 - 4.30 pm

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Question ONE carries 30 marks.
- The rest of the questions carry 20 marks each

Question One (Compulsory)

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i) Econometrics is a combination of economic theory, mathematical economics and statistics, but is completely distinct from each of these three branches of science, Explain. (6 marks)

ii) Differentiate between Theoretical and Applied econometrics. (2 marks)

iii) Suppose that a researcher estimated a consumption function and obtained the results from EVIEWS as in Figure 1, however, there was somewhere malfunction of the printer and did not print out some part of statistics information.

(a) Calculate the t-statistics of each coefficient in Figure 1. (4 marks)

(b) Construct a 95 percent confidence interval for the coefficient of **PDI**. (3 marks)

(c) Use the statistics information from Figure 1 to calculate the S.E of regression. (3 marks)

(d) Use the 5% significant level of t-values to test the hypothesis that PDI is a statistically significant independent variable. (State the hypothesis and statistics to be tested). (4 marks)

(e) What does the Durbin Watson statistics in the figure 1 measure,interptret its value (Hint: $d_l = 1.077$ and $d_u = 1.361$ at 0.05 significance level) (2 marks)

(f) Using the information provided in figure 1, is R^2 significantly different from zero. Explain. (2 marks)

(g) Is the regression spurious? Explain. (2 marks)

Figure 1

EViews - [Equation: UNTITLED Workfile: TAB801]

File Edit Objects View Procs Quick Options Window Help

View | Procs | Objects | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: PCE
Method: Least Squares
Date: 02/24/99 Time: 15:05
Sample: 1956 1970
Included observations: 15

Where
PDI = personal disposable income
PCE = personal consumption expenditure

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.76207	4.681799	#$$$$$%$8	0.0173
PDI	0.881248	0.011427	$%%%$$$	0.0000

R-squared	0.997819	Mean dependent var	367.6933
Adjusted R-squared	0.997651	S.D. dependent var	68.68264
S.E. of regression	&&$$$$$2	Akaike info criterion	5.366547
Sum squared resid	144.0346	Schwarz criterion	5.460954
Log likelihood	-38.24911	F-statistic	5947.715
Durbin-Watson stat	1.339337	Prob(F-statistic)	0.000000

Question Two

a) Distinguish between the following terms as used in econometrics
   i) One tailed test and two tailed test
   ii) Significance level and degree of freedom
   iii) Type I and Type II errors (6 marks)

b) Explain the meaning of multicollinearity and discuss its sources and practical consequences in time series analysis (14 marks)

Question Three

a) What is meant by autocorrelation and why is it a problem in econometric analysis of time series (6 marks)

b) How is the presence of positive and negative first order autocorrelation tested and how is it corrected. (7 marks)

c) Why can the following consumption function not be estimated?
   $C_t = b_0 + b_1 Y_{dt} + b_2 Y_{dt-1} + b_3 \Delta Y_{dt} + u_t$ where $\Delta Y_{dt} = Y_{dt} - Y_{dt-1}$

d) Giving examples explain the difference between time series data and cross sectional data (4 marks)

Question Four

a) State and explain each of the assumptions of the classical linear regression model highlighting the need for each one of them in econometrics (10 marks)

b) Differentiate between zero correlation and statistical dependence between two variables X and Y (5 marks)

c) Discuss the factors to consider when choosing an appropriate econometric technique (5 marks)

Question Five

a) Heteroscedasticity is a problem of cross sectional data; discuss how it can be detected in econometrics. (14 marks)

b) With reference to the following multiple regression model
   $Y_i = b_0 + b_1 X_{1i} + b_2 X_{2i} + u_i$. Explain the meaning of b_0, b_1 and b_2. Are b_0, b_1 and b_2 BLUE? (Proof is not necessary). (6 marks)