

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway
Semester II Examinations 2004 / 2005

Exam Code(s)	3BA1, 3BA5, 3BA6, 4BA4, 3BC1, 4BC2, 4BC3, 4BC4, 4BC5, 3FM1, 1EM1, 1OA1
Exam(s)	B.A., B.A. (ESS), B.A. (PSP), B.Comm., B.Comm. (Language), 3 rd B.Sc. in Fin. Maths. & Econ., Erasmus, Occasional
Module Code(s)	EC363
Module(s)	Econometrics
Paper No.	1
Repeat Paper	
External Examiner(s)	Professor Vincent Munley
Internal Examiner(s)	Mr. Brendan Kennelly Mr. Eoghan Garvey

Instructions:

Answer FOUR questions only. Each question is worth 100 marks.

Duration	2 hours
No. of Pages	3
Department(s)	ECONOMICS
Course Co-ordinator(s)	Mr. Eoghan Garvey

Requirements:

MCQ
 Handout
 Statistical Tables
 Graph Paper
 Log Graph Paper
 Other Material

OLLSKOIL NA hEIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY

Semester 2, 2004/2005: Summer Exam

Econometrics (EC363)

Time allowed: Two hours.

Instructions: Answer four questions only. Each question is worth 100 marks.

Q.1

- (i) Assumption 1 of the simple model is: $E(Y_i | X_i) = \beta_1 + \beta_2 X_i$. What are the usual reasons for its violation in actual models and what is the effect of such violations on the OLS estimator? (50)
- (ii) Assumption 2 is $e_i \sim \text{iid}(0, \sigma^2)$. What are the two main ways in which assumption 2 can be violated and what are the effects on the OLS estimator? (50)

Q.2

- (i) Output can be modelled as follows:
 $Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + e_i$, where the two X variables, respectively, are Labour and Capital, and where all variables are in logs. What are the expected signs of each slope coefficient. How might we test the restriction of constant returns to scale using a t test, and using an F test. (50)
- (ii) What factors affect the power of t tests in multivariate models? (50)

Q.3

- (i) Outline the F-test version and the dummy variable version of the Chow test for structural stability. (50)
- (ii) In a regression of annual economic growth (measured in %) regressed on European subsidies as a % of GDP, let the sum of squared residuals equal 1000, $n=45$, the of squared deviations of X equal 6.5, the critical value of t is 2.017 and let the estimated slope equal 2.9:
a) write out the slope confidence intervals

b) carry out a two tailed test on the true slope, using the usual null? (50)

Q.4 (i) Describe the steps you might take to discover if your model has heteroskedasticity, giving as examples one picture and one test that can be used in the diagnosis. (50)

(ii) Outline the GLS/FGLS strategies to dealing with heteroskedasticity and contrast them with the main alternative strategy that we saw on the course. (50)

Q.5 (i) Describe the steps you might use in estimation if you find that the errors appear to follow an AR1 process. (50)

(ii) Outline the connection between stationarity and cointegration in a time series context. (50)

Q.6. (i) Compare briefly the probit or logit model with the linear probability model. (50)

(ii) Show that Maximum Likelihood and Method of Moments derivations of the slope in the Simple Linear model come up with the same slope formula as the OLS estimator. (50)