

M.A (FINAL) EXAMINATION 2016 HELD IN 2017

ECONOMICS (Paper IV)

ECONOMETRICS

Time: 3 Hours

Max. Marks: 100

Instructions:

- 1) Attempt any FOUR questions.
- 2) All questions carries equal marks.

Q.1 An econometrician wants to investigate the relationship between demand for coffee (Y), the price of coffee (X_2) and consumer's Income (X_3). He has already obtained the following information from data:

$$\begin{array}{lll} \sum Y_i = 1050 & \sum X_{2i} = 90 & \sum X_{3i} = 16500 \\ \sum Y^2 = 78100 & \sum X_{2i}^2 = 600 & \sum X_{3i}^2 = 20950000 \\ \sum Y_i \cdot X_{2i} = 5795 & \sum Y_i \cdot X_{3i} = 1262500 & \sum X_{2i} \cdot X_{3i} = 87100 \end{array}$$

Now answer the following:

- (a) Compute the OLS and maximum likelihood regressions. In what respect the ML equation is better than the OLS equation? What specific assumption generate this result?
- (b) Compute all companying regression statistics for regression equation(s).
- (c) Derive and explain the relationship between simple and adjusted R^2 in a multiple regression model.
- (d) Calculate the income and price elasticities of demand and explain the estimation results.

(e) Test the hypothesis that the demand for coffee is price insensitive.

(f) Construct the ANOVA table and comment on the overall fit of the model.

(g) If the price of coffee equals Rs. 10, while consumer's income Rs. 2000, what will be your forecast for the demand for coffee. Formulate a 95% confidence interval for your forecast.

Q.2 (a) Explain the concept of slope and intercept dummies. In what respect are the coefficients of a dummy variable different from the coefficients of ordinary variables in regression equation?

(b) Discuss in detail some of the important uses of dummy variables in regression analysis.

Q.3 Give the following set of equations:

$$(i) C = \lambda + \beta Y - kr + u \quad (ii) Y = C + I = AD$$

(i). Explain the problem of simultaneity bias and the potential solutions for estimating

Q.4 Discuss various consequences of the presence of autocorrelation in an econometric model. Detect the presence of autocorrelation in the estimated equation in Q.1 and comment.

Q.5 Explain the Goldfeld-Quandt test and the Chow test in detail. What does each measure? Does their similarity/difference cast any light on the relationship of the problems that these test address?

Q.6 Write SHORT NOTES on any of the following:

(a) Multi-collinearity

(b) Effect of Regression Misspecification on Coefficient Estimates

(c) Three Stage Least Squares.

M.A (FINAL) EXAMINATION 2017 HELD IN 2018

ECONOMICS (Paper IV C)

Time: 3 Hour

Max. Marks: 100

Instructions:

- (1) Attempt FOUR questions in all, Question No.4 is Compulsory.
- (2) All questions carry equal marks.
- (3) Unusual convention of denoting derivatives by lowercase letters applies.

Q.1 What is Econometrics all about? Discuss the methodology of Econometrics. Use suitable example to support your discussion.

Q.2 What are the assumptions of Classical Linear Regression Model? Elaborate them by using suitable example.

Q.3 Given $y=1.2c$ $c=0.6y$ where $Y=C+Z$ find r_{yz} and r_{cz} .

Q.4 Following sums were obtained from 10 observations:

$$\sum Y=10; \quad \sum X_1=30; \quad \sum X_2=40$$

$$\sum Y^2=88.2; \quad \sum X_1^2=92; \quad \sum X_2^2=163$$

$$\sum YX_1=59; \quad \sum YX_2=88; \quad \sum X_1X_2=119$$

- (a) Estimate the regression of Y on X_1 and X_2 .
- (b) Test the hypothesis that the coefficient of X_2 is zero.
- (c) Construct the ANOVA table and convert on overall it of the model.

Q.5 Discuss the consequences of HETEROSCEDASTICITY in an econometric model. How it is detected and removed for the model. Use suitable example to explain it.

Q.6 Briefly differentiate following:

- (i) Deterministic and Stochastic relationship
- (ii) Correlation and Autocorrelation
- (iii) Biased and Efficient Estimator
- (iv) Behavioral and Reduced Form Equation

M.A. (FINAL) EXAMINATION 2018 HELD IN 2019
ECONOMICS (PAPER IV C)
ECONOMETRICS

Time: 3 Hours

Max. Marks: 100

Instructions:

- (1) Attempt FOUR questions in all, Question No. 4 is Compulsory.
- (2) All questions carry equal marks.
- (3) Unusual convention of denoting derivatives by lowercase letters applies.

- Q.1 (a) What are the major ingredients of Econometric Modeling?
(b) What aspects of Econometrics make it different from other social sciences?
(c) Discuss the methodology of econometrics?

- Q.2 A researcher is using data for a sample of 3240 employees to investigate the relationship between employees' hourly wage rates Y_1 (measured in Rupees per hour) and their age X_1 (measured in years). The population regression equation takes the form of equation $Y_1 = \beta_0 + \beta_1 X_1 + v_1$. Preliminary analysis data produces the following sample information:

$$\sum Y_1 = 34379.16 \quad \sum X_1 = 96143.00 \quad \sum X_1 Y_1 = 102325.00$$

$$\sum Y_1^2 = 2878451.00 \quad \sum Y_1^2 = 443227.1 \quad \sum e^2 = 77908.35$$

$$\sum Y X_1 = 3666.426 \quad \sum X_1^2 = 25526.17 \quad \sum Y_1^2 = 78434.97$$

$$N = 3240$$

- (a) Use the above information to compute OLS estimates of the intercept β_0 and the slope

Coefficient β_1 .

- (b) Interpret the intercept and slope coefficient estimate.

- (c) Calculate an estimate of σ^2 the error variance.

(d) Compute the value of R^2 . Briefly explain what the calculated value of R^2 means.

(e) Perform a test of the null hypothesis $H_0: \beta_1=0$ against the alternative hypothesis $H_1: \beta_1 \neq 0$ at the 5% significance level. Show how you calculated the t statistic. State the decision rule you use, and the inference you would draw from the test. Briefly explain what the test outcome means.

Q.3 Consider the regression $Y_1 = \beta_1 + \beta_2 u_1$ and the information about u_1 is $u_1 = P u_{1.1}$

(i) If the regression is estimated by OLS, would $E(\hat{\beta}) = \beta$

(ii) Find out $\text{Var}(u_1)$

(iii) Determine $\text{Co Var}(u_1, u_{1.1})$

Q.4 (a) Illustrate the nature of homoscedasticity and heteroscedasticity in two diagrams.

(b) Give the reasons for heteroscedasticity. Briefly explain.

(c) The error variance δ^2 is not known, but you suspect that it is proportional to X_1^2 . What is a remedial measure for heteroscedasticity?

(d) The error variance δ^2 is not known, but you suspect that it is proportional to X_1 .

(e) What is a remedial measure for heteroscedasticity?

Q.5 (a) Explain the dummy variable trap using an example

(b) Illustrate in the example of a savings function how dummy variables can be used as an alternative to the Chow test.

(c) Explain the use of a dummy variable in an interactive (or multiplicative) form. Illustrate in an example.

(d) Explain the use of dummy variables to seasonally adjust time series. Illustrate in an example.

Q.6 (a) What do the coefficient of correlation and the coefficient of determination measure? How does the coefficient of determination relate to the total, explained, and residual sum of squares?

(b) Explain the difference between linear in the variables and linear in the parameters. Give examples of each.

(c) Show that regression passes through sample means of Y_1 and X_1 .

(d) Let β_{yx} and β_{xy} represent the slopes in the regression on Y on X and X on Y , respectively, show that $\beta_{yx} \beta_{xy} = r^2$