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REC-103

RESEARCH DEGREE PROGRAMME IN ECONOMICS

Term-End Examination

00363

December, 2017

REC-103 : ECONOMETRIC METHODS

Time : 3 hours *Maximum Marks : 100*

Note : *Answer questions from each section as directed.*

SECTION A

*Answer any **two** questions from this section.* *2×20=40*

1. Suppose you want to explain household expenditure as a function of household savings and assets.

   (a) Write down the regression model specifying the assumptions you will make.

   (b) What econometric problems do you anticipate in estimation of the model ?

   (c) What remedial measures would you take ?

2. Specify the tests you will carry out to detect autocorrelation in a regression model. Write down the steps of one remedial measure to take care of autocorrelation problems.

3. What is meant by Stationarity ? What are the problems that you encounter due to non-stationarity ? How do you tackle the problem ?

4. Consider the following simultaneous equations system :

$$Y_1 = \alpha_1 Y_2 + \beta_1 X_1 + \beta_2 X_2 + u_1$$

$$Y_2 = \alpha_2 Y_1 + \beta_3 X_3 + u_2$$

(a) Find out the identification status of both the equations.

(b) Explain how the second equation can be estimated.

SECTION B

*Answer any **five** questions from this section.* 5×12=60

5. (a) Explain the procedure of applying F-test for testing a null hypothesis of restrictions on parameters.

(b) Consider the following regression equations estimated on a sample size of 50 :

$$y_i = \alpha + \beta_1 x_i + \beta_2 z_i + u_i$$

$$R^2 = 0{\cdot}31$$

$$y_i = \alpha + \beta_1 x_i + v_i$$

$$R^2 = 0{\cdot}26$$

Can you use the above information to test whether $\beta_2 = 0$?

6. Consider the Cobb-Douglas production function given by $Q = A K^{\alpha} L^{\beta} e^{u}$ (standard notations apply).

(a) Explain how OLS estimators can be obtained for α and β.

(b) Find the standard error of OLS estimator $\hat{\beta}$.

7. How do you specify Fixed effect and Random effect models in panel data ? On what basis do you make a choice between the two models for a given dataset ?

8. What is meant by R-squared (R^2) ? Can we compare R^2 obtained from two models ? Why do we need adjusted R^2 ?

9. What are the limitations of Linear Probability Models (LPM) ? How does the logit model help us in overcoming the limitations of LPM ?

10. Distinguish between the autoregressive (AR) and moving average (MA) processes. Explain how both of the above can be accommodated in an ARIMA model.

11. For a multiple regression model, prove that OLS estimators are BLUE.

12. Write short notes on the following :

    (a) RESET Test

    (b) Likelihood Ratio Test