PGDM-2014-16

Elements of Basic Econometrics

Subject Code: DM-601

Sixth Trimester End Examination, February 2016

Time Allowed-2 Hrs 30 Min   Maximum Marks-50

Roll No. _____

Instructions: Students are required to write Roll No on every page of the question paper. Writing anything except the Roll No will be treated as Unfair Means. All other instructions on the reverse of Admit Card are to be followed meticulously.

Sections	No. of Questions to Attempt	Marks	Marks
A	3 out of 5 (Short Questions)	5Marks each	3*5=15
B	2 out of 3 (Long Questions)	10 Marks each	2*10=20
C	Compulsory Case Study	15 Marks	15
		Total Marks	50

Section A

I.   How is the significant Auto-correlation adjusted in a regression model? What is the method of estimation of regression from data adjusted for auto-correlation?

II.   How is significant Heteroscedasticity adjusted in a regression model? What is the method of estimation of regression from data adjusted for Heteroscedasticity?

III.   How is the stationarity of time series modeling determined?

IV.   Explain the three alternative versions of Random Walk Model (RWM).

V.   Explain Indirect Least Squares.

Section B

VI.   The following are the OLS estimates of Distributed Lag Model (DLM) of per capita investment, Y_t as a function of per capita disposable income, X_t:

ln Y_t=-3.0509+0.4752ln Y_{t-1}+0.6983 lnX_t, R^2=0.9929, F=2458.27, λ =0.5234

t: (-3.19)   (3.50)   (3.32)

The following are the structural relations of the above DLM:

$lnY^*_t = \beta_o + \beta_1 lnX_{1t} + U_t$………   (1)

$$\ln Y_t - \ln Y_{t-1} = \lambda(\ln Y^*_t - \ln Y_{t-1}) \ldots \ldots \quad (2),$$

Determine relation 1 from the OLS estimates of DLM given above. Also determine the value of λ of relation 2 from OLS estimate of DLM. Explain the proportion of adjustment of actual to desired level of per capita investment and the meanings of parametric estimates of the coefficients of long run relation between per capita investment and per capita disposable income.

VII. (a) Briefly explain the concept of identification and its different levels.

(b) Determine the status of identification of the following equations:

$$Q_d = \beta_o + \beta_1 P_t + U_t \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1)$$

$$Q_d = \alpha_o + \alpha_1 P_t + v_t \ldots \ldots \ldots \ldots \ldots \ldots (2)$$

Equilibrium Condition: $Q_d = Q_s \ldots \ldots \ldots \ldots (3)$

$$Q_d = \beta_o + \beta_1 P_t + \beta_2 Y_t + U_t \ldots \ldots \ldots \ldots \ldots (4)$$

$$Q_d = \alpha_o + \alpha_1 P_t + \alpha_2 R_t + v_t \ldots \ldots \ldots \ldots \ldots (5)$$

VIII. Determine if the time series data of the Whole Sale Price Index in Indian economy, given below, are stationary. Also estimate the following auto-regression model:

$$WPI_t = \alpha_o + \alpha_1 WPI_{t-1} + U_t \ldots \ldots \ldots (1)$$

Does the OLS estimate of the regression model 1. satisfy Engel-Granger test of Co-integration?

Year	WPI
1992	31.89419
1993	35.67793
1994	38.34532
1995	42.3877
1996	46.34721
1997	48.42328
1998	50.61559
1999	53.59003
2000	55.43942
2001	59.07271
2002	61.92
2003	63.48428
2004	66.92107
2005	71.32494
2006	74.69238
2007	78.23319
2008	82.05235
2009	89.17311
2010	91.27305
2011	100
2012	108.8876

Section C

IX. The following quarterly data relate to the time series of per capita personal disposable income, X_t, and per capita consumption expenditure, Y_t in (Rs. 000): Year

Tear	Y_t	X_t
1 992		
	236	257
1993	254	275
1994	267	293
1995	281	309
1996	290	319
1997	311	337
1998	325	350
1999	335	364
2000	355	385
2001	375	405
2002	401	437

1. Are these two series stationary?
2. What is the degree and direction of inter-relations among these two variables, if per capita disposable income is treated as the independent of these two?
3. What is the value of auto-correlation coefficient of the model?
4. Estimate the model after correcting for auto-correlation.
5. What meanings do you attach to the results of the regression model which is free from auto-correlation?