

SRN – 20

M.Com. (Semester – III) (Acct. and Fin.) Examination, April 2017
COO3A1 : ECONOMETRICS FOR FINANCE (OA – 18)

Duration : 3 Hours

Max. Marks : 60

- Instructions :** 1) This paper consists of **nine** questions carrying **equal** marks.
2) Question No. 1 consists of **5 compulsory** questions of **2 marks each**.
3) Answer **any 5** questions from question 2, 3, 4, 5, 6, 7, 8, and 9.
4) **Each** question carries **10** marks. Figures to the **right** indicate marks.

1. Answer the following short questions in brief : (5×2=10)
- a) What do you understand by a Linear Regression Model ?
 - b) Give two points of distinction between Homoscedasticity and Heteroscedasticity.
 - c) What is meant by Multiple Co-efficient of Determination (R^2) ?
 - d) Mention any two benefits of employing panel data in regression modeling.
 - e) Distinguish between ANOVA and ANCOVA Models.
2. Discuss the traditional econometric methodology with suitable example. 10
3. a) Mention the practical consequences of Multicollinearity. 3
- b) What remedial measures can be taken to alleviate the problem of Multicollinearity ? 7
4. What do you understand by :
- a) Stationary Stochastic Process. 5
 - b) Unit Root Tests. 5
5. a) The following regressions are based on Consumer Price Index (CPI) data for the United States for the period 1960-2007, for a total of 48 annual observations :

$$\overline{\Delta CPI}_t = 0.0334CPI_{t-1}$$

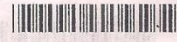
$$t = (12.37)$$

$$R\text{-square} = 0.0703$$

$$d = 0.3663$$

$$DF \text{ (critical)} = -1.95$$

P.T.O.



$$\overline{\Delta\text{CPI}}_i = 1.8662 + 0.0192\text{CPI}_{t-1}$$

$$t = (3.27) \quad (3.86)$$

$$R\text{-square} = 0.249$$

$$d = 0.4462$$

$$DF \text{ (critical)} = 2.93$$

Examine the preceding regressions and comment on the stationarity of Consumer Price Index (CPI) time series.

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b) Explain the concept of Vector Autoregression (VAR) with suitable example.

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6. a) Define Spurious Regression.

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b) From a study to access the impact of beer tax and income on beer consumption across 50 states for the period 1975-2000, the results of Pooled Ordinary Least Square (OLS), Fixed Effects and Random Effects Model are presented below.

Dependent Variable : Beer Consumption

Variable	Pooled OLS	Fixed Effects Model	Random Effects Model
Constant	1.4192 (24.37)	1.7617 (52.23)	1.7542 (39.22)
Beer tax	-0.0067 (-2.13)	-0.0183 (-9.67)	-0.0181 (-9.69)
Income	-0.000 (-1.12)	-0.000020 (-9.17)	-0.000019 (-9.10)
R-square	0.0062	0.0052	0.0052
Adjusted R-square	0.0051	0.0049	0.0048
F-statistic	10830.51	6515.89	6712.34
Prob. (F-statistic)	0.0000	0.0000	0.0000
Durbin-Watson stat	0.0630	0.5206	0.3412
Hausman test stat	3.445		
Chi-square _{0.05} (2 df)	5.992		

Figures in parenthesis are the estimated standard errors.

Make necessary interpretations considering the three panel data models.

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7. Explain the concept of Testing of Hypothesis with suitable example. **10**
8. Consider the equation of salaries of CEOs in terms of annual firm sales, return on equity (roe, in percentage form) and return on the firm's stock (ros, in percentage form).

$$\log(\overline{\text{salary}}) = 4.32 + 0.280 \log(\text{sales}) + 0.174 \text{ roe} + 0.00024 \text{ ros}$$

$$\text{se} = (0.32) \quad (0.35) \quad (0.0041) \quad (0.00054)$$

$$n = 209 \quad R\text{-square} = 0.283 \quad t_{0.05} (205 \text{ df}) = 1.980$$

$$F \text{ stat} = 248.06 \quad P\text{-value} (F) = 0.000$$

- a) Considering the above output, state whether the results concur with priori expectations of signs.
- b) Compute the t-values and state whether the estimated co-efficients are statistically significant at 5 percent level of significance.
- c) Interpret the R² value.
- d) Test the overall significance of the model.
- e) Assuming the co-efficients of the regressors in the model to be zero, estimate the mean salary of the CEOs. **10**
9. The following regression output highlights the literacy rate for population across 19 states for the period 2007-08 :

$$\hat{Y}_i = 75.82 - 16.32D_{2i} + 16.00D_{3i}$$

$$\text{se} = (1.82) \quad (2.10) \quad (2.10)$$

$$t = (41.66) \quad (-7.77) \quad (7.62)$$

$$p = (0.00) \quad (0.00) \quad (0.00)$$

$$R\text{-square} = 0.8921$$

where, Y_i = literacy rate (percent)

D_{2i} = Gender ; 1 = Female, 0 = otherwise

D_{3i} = Area of residence ; 1 = Urban, 0 = otherwise

- a) Identify the benchmark category in the regression.
- b) Comment whether the preceding average literacy rates are statistically different as compared to the base category. **10**