PGDM & IB, 2017-19
Financial Econometrics
DM-415/IB-309
Trimester – III, End-Term Examination: March 2018

Time allowed: 2 Hrs 30 Min
Max Marks: 50

Roll No: ____________

Instruction: 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 should be followed meticulously.

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5 (Short Questions)	5 Marks 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

1. What is the conditional expectation function or the population regression function?
2. What is the difference between the population and sample regression functions? Is this a distinction without difference?
3. Explain the use of ANNOVA in regression models?
4. What is the concept of heteroscedasticity? What happens if regression model suffe from this problem?.
5. Why do we test normality of error terms? What is its significance?

Section: B

1. Please calculate parameters, standard error of parameters and standard deviation of error term from the following data, where X is independent variable and Y is dependent variable.

Variables										
X	86	79	76	69	65	62	52	51	51	48
Y	3	7	12	17	25	35	45	55	70	120

2. Draw flow chart of hypotheses testing in OLS regression.

3. An analyst has incurred a problem while building a functional model where t-values of some parameters are insignificant but F-statistic of the model is significant. Similarly, overall R-square value is also very high. Explain what kind of problem the analyst is facing and what can be the impact of this problem on the model robustness?

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Section: C

Consider the following regression output:

$$\hat{Y}_i = 0.2033 + 0.65560X_i$$

se (intercept)= 0.0976
se (slope)= 0.1961
r^2= 0.397
RSS= 0.0544
ESS=0.0358

Where Y= labor force participation rate (LFPR) of women in 1972 and X= LFPR of women in 1968. The regression results were obtained from a sample of 19 cities in the United States. Answer the following five questions

(i) How do you interpret this regression?
(ii) Test the hypothesis: H0: B2=1 against H1:B2>1. Which test do you use? And why?
(iii)Suppose that the LFPR in 1968 was 0.58. On the basis of the regression results given above, what is the mean LFPR in 1972. Establish a 95 per cent confidence interval for the mean prediction.

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Formula

March 14, 2018

$$x_t = X_t - \bar{X} \quad (0.1)$$

$$y_t = Y_t - \bar{Y} \quad (0.2)$$

$$\hat{\beta}_2 = \frac{\sum y_t x_t}{\sum {x_t}^2} \quad (0.3)$$

$$\hat{\beta}_1 = \bar{Y} - \hat{\beta}_2 \bar{X} \quad (0.4)$$

$$\hat{\sigma}^2 = \frac{\sum \hat{\mu_t}^2}{n-2} \quad (0.5)$$

$$var(\hat{\beta}_2) = \frac{\hat{\sigma}^2}{\sum {x_t}^2} \quad (0.6)$$

$$var(\hat{\beta}_1) = \frac{\sum {X_t}^2}{n \sum {x_t}^2} \sigma^2 \quad (0.7)$$

Where: $\hat{\beta}_2$= slope coefficient $\hat{\beta}_1$= intercept μ_t= error terms $\hat{\sigma}^2$= standard deviation of error term