UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End-Term Examination, May 2019

Program/course: MBA-General (Finance)	**Semester** : IV
Subject: Financial Econometrics	**Max. Marks** : 100
Code : MBCF863	**Duration** : 3 Hrs
No. of page/s: 5	

Section-A
All the questions are compulsory in this section.   [10*2=20]

Q.No.	Questions	CO
1.	In a regression analysis we are concerned with the study of- (a) mean value of X population. (b) mean value of Y population. (c) dependence of Y variable on one or more explanatory variables. (d) interdependence of X and Y variables.	CO1
2.	In the simple linear regression model, the regression slope- (a) indicates by how many percent Y increases, given a one percent increase in X. (b) when multiplied with the explanatory variable will give you the predicted Y. (c) indicates by how many units Y increases, given a one unit increase in X. (d) represents the elasticity of Y on X.	CO1
3.	The Jarque –Bera test is- (a) model specification test. (b) residual normality test. (c) test of unbiasedness of estimators. (d) test of goodness of fit for the model.	CO1
4.	Coefficient of determination measures- (a) the correlation between X and Y. (b) fit of the functional form. (c) the residual sum of squares. (d) the explained sum of squares.	CO1
5.	Heteroscedasticity means that- (a) all variables cannot be assumed to be homogeneous. (b) the variance of the error term is not constant. (c) the observed units have no relation. (d) the X and Y are not correlated.	CO1
6.	A non-stationary time series is one with- (a) time-varying mean.	CO1

	(b) time-varying variance.	
	(c) both (a) and (b).	
	(d) all of the above.	
7.	By rejecting the H_0, we mean that our finding is- (a) statistically insignificant. (b) statistically significant. (c) nothing to do with significance. (d) P value is not useful.	CO1
8.	Testing for cointegration is given by- (a) Dickey-Fuller test. (b) Engle-Granger test. (c) Error Correction Mechanism. (d) F-test.	CO1
9.	A non-stationary series that becomes stationary on second differencing is- (a) integrated of order 0. (b) integrated of order 1. (c) integrated of order 2. (d) integrated of order 3.	CO1
10.	Estimation using OLS on autocorrelated data results in the parameters being estimated to be- (a) baised. (b) inconsistent. (c) asymptotically normally distributed. (d) inefficient.	CO1

Section-B   **[5*10=50]**
Attempt all the questions.

Q.No.	Questions	CO
11.	Suppose you were to develop a econometric model on rate of return of a project initiated by a real sector firm. What variables would you consider in developing such a model and why?	CO1,CO2, CO3
12.	What is the error correction mechanism (ECM)? What is its relation with cointegration?	CO1,CO2
13.	Explain the methodology of econometrics with the help of an example.	CO1,CO2
14.	The following regression results were obtained between	CO1,CO2,CO3

	nominal exchange rate and relative prices for the period from 2000 to 20144- $$\tilde{Y}_t = 6.682 - 4.318X_t, \qquad R^2 = 0.528$$ $$Se = (1.22) \quad (1.33)$$ Where Y = exchange rate of the Indian rupees to the US Dollar and X = ratio of US consumer price index to the Indian consumer price index. (a) Interpret this regression. How would you interpret R^2 ? (b) Does the negative value of Xt make economic sense? What is the underlying economic theory? (c) Calculate t-value for coefficient of X_t and find whether is it significant at 5% or not.	
15.	For a sample of 210 firms, a research firm obtained the following regression results Log(salary) = 4.32 + 0.280log(sales) + 0.0174roe + 0.00024ros $\quad$ Se = (0.32) (0.035) $\qquad$ (0.0041) $\qquad$ (0.00054) $\quad R^2 = 0.283$ Where salary = salary of CEO, sales = annual firm sales, roe = return on equity in percent, ros = return on firm's stock and figures in the parentheses are the estimated errors. (a) Interpret the preceding regression results. (b) Which of the coefficient are individually statistically significant at the 5 percent level? (c) Can you interpret the coefficients of 'roe' and 'ros' as elasticity coefficient? Why or why not?	CO1,CO2,CO3

Section-C $\qquad$ [1*30=30]
Attempt the given question.

Q.No.	Questions	CO
16.	From the data for the period 1971-I to 1988-IV quarter for India, the following regression results were obtained-	CO1,CO2, CO3,CO4

I. $InM1_t = -10.2571 + 1.5975InGDP_t$

   $t = (-12.9422)$ (25.8865), $R^2 = 0.9463$, $d = 0.3265$

II. $\Delta InM1_t = 0.0095 + 0.5833\Delta InGDP_t$

   $t = (2.4957)$ (1.8958), $R^2 = 0.0885$, $d = 1.7399$

III. $\Delta\breve{u}_t = 0.1958\breve{u}_{t-1}$

   $t = (-2.2521)$, $R^2 = 0.1118$, $d = 1.4767$

Where M1 = money supply, GDP = gross domestic product, In = natural log and $\breve{u}_{t-1}$ = the estimated residuals from regression I.

a) Interpret regression I and II.

b) Do you suspect that regression I is spurious? Why?

c) Is regression II spurious? How do you know?

d) From the result of regression III, would you change your conclusion in 'b'? why?

e) Now consider the following regression:

$\Delta InM1_t = 0.0084 + 0.7340\Delta InGDP_t - 0.0811\breve{u}_{t-1}$

   $t = (2.0496)$ (2.0636) (-0.8537),

   $R^2 = 0.1066$, $d = 1.6697$

What does this regression tell you? Does this help you to decide if regression I is spurious or not?

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Section-A
All the questions are compulsory in this section.   [10*2=20]

Q.No.	Questions	CO
1.	When our findings is statistically significant it means- (a) the 't' value and 'p' value are not equal. (b) standard error is very high. (c) the estimated value is significantly different from the hypothesized value. **(d)** the estimated value is not significantly different from the hypothesized value.	CO1
2.	In the simple linear regression model, the regression slope- (a) indicates by how many percent Y increases, given a one percent increase in X. (b) when multiplied with the explanatory variable will give you the predicted Y. (c) indicates by how many units Y increases, given a one unit increase in X. (d) represents the elasticity of Y on X.	CO1
3.	The Jarque –Bera test is- (a) model specification test. (b) residual normality test. (c) test of unbiasedness of estimators. (d) test of goodness of fit for the model.	CO1
4.	The fitted regression equation is given by $Y = -12 + 0.5X$. What is the value of residual at the point $X = 50$, $Y = 70$? (a) 57. (b) -57 . (c) 0. (d) 33.	CO1
5.	Heteroscedasticity means that- (e) all variables cannot be assumed to be homogeneous. (f) the variance of the error term is not constant. (g) the observed units have no relation. (h) the X and Y are not correlated.	CO1
6.	A non-stationary time series is one with-	CO1

	(a) time-varying mean. (b) time-varying variance. (c) both (a) and (b). (d) all of the above.	
7.	Multicollinearity can be detected if the regression function has- (a) high R^2 with all coefficients having t-ratios. (b) may not have high R2 but all coefficients have high t-ratios. (c) high R2 with very few or no coefficients having high t-ratios. **(d)** low R2 with almost all coefficients having low t-ratios.	CO1
8.	Testing for cointegration is given by- (e) Dickey-Fuller test. (f) Engle-Granger test. (g) Error Correction Mechanism. (h) F-test.	CO1
9.	A non-stationary series that becomes stationary on second differencing is- (e) integrated of order 0. (f) integrated of order 1. (g) integrated of order 2. (h) integrated of order 3.	CO1
10.	Estimation using OLS on autocorrelated data results in the parameters being estimated to be- (a) baised. (b) inconsistent. (c) asymptotically normally distributed. (d) inefficient.	CO1

Section-B [5*10=50]
Attempt all the questions.

Q.No.	Questions	CO
11.	What is the role of stochastic error term u_i in regression analysis? What is the difference between the stochastic error term and the residual, $\check{u}_i$?	CO1,CO2, CO3
12.	Discuss alternative methods of to check the problem of heteroscedasticity.	CO1,CO2
13.	Explain the methodology of econometrics with the help of an example.	CO1,CO2
14.	Consider the following regression output;	CO1,CO2,CO3

$\check{Y}_t = 0.2033 + 0.6560X_t$, $\qquad R^2 = 0.397$ $Se = (1.22) \quad (1.33)$ Where Y = Labour force participation rate (LFPR) of women in 1972 and X = LFPR of women in 1968. (c) Interpret this regression. How would you interpret R^2 ? (b) Calculate t-value for coefficient of X_t and find whether is it significant at 5% or not.	

| 15. | A research institution obtained the following regression results:

$Log(FDI) = 4.32 + 0.280 \log(GDP) + 0.0174TO - 0.0024IR$

$\qquad Se = (0.32) \quad (0.035) \qquad (0.0041) \qquad (0.00054)$

$\qquad R^2 = 0.283$

Where FDI = Foreign Direct Investment, GDP = Gross Domestic Product, TO = Trade Openness, IR = rate of inflation and figures in the parentheses are the estimated errors.

(d) Interpret the preceding regression results.

(e) Which of the coefficient are individually statistically significant at the 5 percent level?

(f) Can you interpret the coefficients of 'TO' and 'IR' as elasticity coefficient? Why or why not? | CO1,CO2,CO3 |

Section-C [1*30=30]
Attempt the given question.

Q.No.	Questions	CO
16.	From the data for the period 1971-I to 1988-IV quarter for India, the following regression results were obtained- IV. $InEC_t = -10.2571 + 1.5975 InGDP_t$ $\qquad t = (-12.9422) \quad (25.8865), \quad R^2 = 0.9463, d = 0.3265$ V. $\Delta InEC_t = 0.0095 + 0.5833\Delta\ InGDP_t$ $\qquad t = (2.4957) \quad (1.8958), \qquad R^2 = 0.0885, d = 1.7399$ VI. $\Delta\check{u}_t = 0.1958\check{u}_{t-1}$ $\qquad t = (-2.2521), \qquad\qquad R^2 = 0.1118, d = 1.4767$	CO1,CO2, CO3,CO4

Where EC = Energy Consumption, GDP = gross domestic product, In = natural log and $\breve{u}_{t-1}$ = the estimated residuals from regression I.

f) Interpret regression I and II.

g) Do you suspect that regression I is spurious? Why?

h) Is regression II spurious? How do you know?

i) From the result of regression III, would you change your conclusion in 'b'? why?

j) Now consider the following regression:

$$\Delta InEC_t = 0.0084 + 0.7340\Delta\ InGDP_t - 0.0811\breve{u}_{t-1}$$

$$t = (2.0496) \quad (2.0636) \qquad (-0.8537),$$

$$R^2 = 0.1066,\ d = 1.6697$$

What does this regression tell you? Does this help you to decide if regression I is spurious or not?