



NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS
2024 1 EXAMINATION

COURSE TITLE: APPLIED ECONOMETRICS
COURSE CODE: ECO 453
CREDIT UNITS: 2 UNITS
TIME ALLOWED: 2 HOURS
INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO (2) QUESTIONS

QUESTION ONE

- 1a. List the assumptions of the nonlinear regression (4 marks)
- 1b. List and explain the two (2) most common methods used in obtaining nonlinear parameter estimates (4 marks)
- 1c. Determine if the following AR processes are stationary, unit root or explosive
- i. $y_t = 0.5y_{t-1} + \varepsilon_t$
- ii. $y_t = 1.5y_{t-1} + \varepsilon_t$
- iii. $y_t = y_{t-1} - 0.25y_{t-2} + \varepsilon_t$
- iv. $y_t = 1.5y_{t-1} - 0.5y_{t-2} + \varepsilon_t$ (19 marks)
- 1d. Define the term "Autoregressive" (AR) (3 marks)

QUESTION TWO

- 2a. A researcher with a sample size of 100 observations performed an ADF test and obtained the following results (standard errors in parentheses). What can you conclude about the stationarity of y_t ? The 5% critical value for the test is -2.89
- a. $\Delta \hat{y}_t = 5.16 - 0.78y_{t-1} - 0.02\Delta y_{t-1}$
(0.71) (0.10) (0.08)
- b. $\Delta \hat{y}_t = 1.80 - 0.65y_{t-1}$
(0.29) (0.65)
3. $\Delta \hat{y}_t = 0.53 - 0.94y_{t-1} + 0.14\Delta y_{t-1} - 0.1\Delta y_{t-2}$
(0.43) (0.30) (0.04) (0.04) (6 marks)
- 2b. Explain the crucial distinction between fixed and random effects (2 marks)
- 2c. With the aid of a table, explain the differences between the fixed and random effect models (12 marks)

QUESTION THREE

- 3a. List and explain the 5 cases provided for testing the co-integrating bound test according to Pesaran et al. (2001) (5 marks)
- 3b. Define the ARDL model (2 marks)
- 3c. Explain the advantages the ARDL has over conventional Johansen co-integration techniques (5 marks)
- 3d. Discuss the steps in estimating a panel equation in E-views (8 marks)

QUESTION FOUR

- 4a. What is the difference between the VAR and granger causality test (3 marks)
- 4b. Define impulse response in econometrics analysis (2 marks)
- 4c. List the modeling procedure in obtaining the impulse response functions (4 marks)
- 4d. Using the impulse response function interpret these graphs (6 marks)

