UNIVERSITY OF COLOMBO

FACULTY OF ARTS

THIRD YEAR EXAMINATION IN ARTS (ECONOMICS) -2018

END OF THE SECOND SEMESTER

ECN 3255: ECONOMETRIC ANALYSIS

TIME ALLOWED: **TWO (02) HOURS ONLY**

ANSWER ANY **THREE (03) QUESTIONS**

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1. Assume a researcher runs the following regression model to estimate the returns to education.

$$lnwage_i = \beta_1 + \beta_2 Education_i + u_i$$

   (a) Does this model suffer from model mis-specification? If yes, specify the true model.

(05 Marks)

   (b) What are the consequences of omitted variable bias? Show omitted variable bias violates the BLUE property of OLS estimator.

(10 Marks)

   (c) What are the alternative approaches in avoiding omitted variable bias in regression models.

(05 Marks)

2. Consider the following specification;

$$Y_i = \beta_1 + \beta_2 X_i + u_i \; ; \quad \text{where; cov } (x,u) \neq 0$$

   (a) Show OLS estimator is biased in above context.

(08 Marks)

   (b) Propose and discuss an alternative estimator to resolve the above econometric issue. What are the sufficient and necessary conditions in the proposed estimator?

(07 Marks)

   (c) Identify and briefly discuss at least two occasions in which a regression model could suffer from the above econometric issue.

(05 Marks)

3.

(a) Show heterokedasticity leads to higher variance in estimated coefficients.

(07 Marks)

(b) "Heteroskedasticity is common in cross-sectional regression models" Do you agree with this statement? Explain your answer with appropriate examples.

(05 Marks)

(c) What are the other alternative approaches, except deriving robust standard errors, for dealing with heteroskedasticity issue in regression model?

(08 Marks)

4. Assume following model;

$$Y_t = \beta_1 + \beta_2 X_t + \beta_3 Y_{t-1} + u_t;$$

where Cov $(u_i, u_j) \neq 0$ and Y_t is modeled as AR(1) process

(a) Show OLS estimator is not only biased but also less efficient.

(10 Marks)

(b) Propose at least two tests, except Durbin-Watson, for detecting autocorrelation.

(07 Marks)

(c) "Researchers often find autocorrelation in time series regression models" Do you agree with this statement? Explain your answer.

(03 Marks)

5. Write short essays on each of the followings (05 Marks each)

(a) Multicolinearity in OLS estimator

(b) Autoregressive Distributed Lags (ADL) Models

(c) Irrelevant variables in OLS estimator

(d) Over-identification in IV estimator

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