

Master of Arts Examination 2018
(2nd year, 3rd Semester)
Economics
Advanced Econometrics I

Time: Two hours

FullMarks 30

Answer any three questions

1. (a) Explain the consequences of omitting relevant explanatory variables from any regression.
 (b) Discuss the test for linearity based on Box-Cox transformation.

5+5

2(a) Explain the concept of Generalized Method of Moments (GMM) estimator. What are the major reasons for the current popularity of GMM estimator?

- (b) Show that OLS estimator is a special case of GMM estimator.

4+6

3. Consider the General Linear Regression model where some of the explanatory variables may not be predetermined with respect to the error term of the equation. Obtain fully efficient GMM estimator of the parameter vector, highlighting the necessary assumptions. Specify asymptotic covariance matrix for this estimator.

10

4. Suppose there is a dynamic panel model as,

$$y_{it} = \delta y_{it-1} + \beta_1 X_{it}^1 + \varepsilon_{it}$$

$$\varepsilon_{it} = \alpha_i + u_{it}$$

Where $i=1,2,3,4,5$ and $t=1,2,3,4$

With α_i follows $iid(0, \sigma_\alpha^2)$ and U_{it} follows $iid(0, \sigma_u^2)$

The set of explanatory variables is (y_{it-t}, X_{it}^1) same for all the cross-section. This X_{it}^1 variable is strictly exogenous.

- a. Derive the matrix of all possible valid instruments for i^{th} cross-section.
 b. How many numbers of orthogonality conditions are there for each cross-section?
 c. Derive Two-step Arellano and Bond (1991) estimator for the above model.

4+3+3=10

5. Write short notes on (any two)

- (a) 2SLS estimator as an interpretation of GMM estimator.
 (b) Test for restrictions using GMM estimator.
 (c) HAC Covariance Matrix estimation
 (d) Nickl's bias in dynamic framework