UNIVERSITY OF DELHI
DELHI SCHOOL OF ECONOMICS
DEPARTMENT OF ECONOMICS

Minutes of Meeting

Subject	:	B.A. (Hons) Economics – Sixth Semester (2017)
Course	:	26 - Applied Econometrics
Date of Meeting	:	13th January 2017
Venue	:	Department of Economics, Delhi School of Economics, University of Delhi
Chair	:	Prof. Pami Dua

Attended by:

1. Neelam Singh, LSR College
2. Deepika Goel, Aryabhatta College
3. Krishna Ram, Shivaji College
4. Lokendra Kumawat, Ramjas College
5. Padma Suresh M, Sri Venkateshwara College
6. Dr. Nasim Ansari, DCAC College
7. Poonam Kalra, St. Stephen's College
8. Simin Akhter, Zakir Husain College
9. Chandan Singh, Hindu College
10. Sarweshwar Kumar Gautam, Satyawati College (M)
11. Madhvi Moni, Hansraj College
12. Himani Shekhar, Kalindi College
13. Shikha Singh, Daulat Ram College
14. Shilpa Chaudhary, Janaki Devi Memorial College

1. It was decided that for the academic session 2016-17, the main textbook would continue to be Basic Econometrics by Gujarati, Porter and Gunasekar(2012) supplemented by Wooldridge(2014) for selected topics. For applications using software, Econometrics by Example by Gujarati (2014) would be the recommended text.
2. It was also decided that in Section II.1 i.e. The Matrix Approach to Linear Regression Model, the entire Appendix C in Gujarati and Porter (2012), 5th edition (International) would be included in the reading list.
3. Teachers are advised to use the following textbook for reference in the Applied Econometrics course in the BA(Hons) Semester batch of 2016-17:

   Asteriou, D and Hall, Stephen G, ***Applied Econometrics***, 3rd Edition, 2015, Palgrave Macmillan.

4. The Applied Econometrics course must orient students to do a research project and get hands on experience with appropriate software (GRETL/EViews/ R/Stata/EXCEL). This would form part of the Internal Assessment.

   The details of the Syllabus, Topic-wise Reading list, recommended text books and Student Assessment summary are attached.

SYLLABUS

I. Stages in Empirical Econometric Research

II. The Linear Regression Model: Estimation, Specification and Diagnostic Testing

- i. The Matrix Approach to Linear Regression Model: The k- variable regression model, Assumptions of the Classical Linear Regression Model, OLS estimation, Variance-Covariance Matrix, Coefficient of Determination R^2.
- ii. Review of Functional forms and Qualitative explanatory variable regression models
- iii. Regression Diagnostics
  - a. Detection of and remedial measures for Multicollinearity, Autocorrelation and Heteroscedasticity.
  - b. Model Selection and Diagnostic Testing
    1. Tests of Specification errors: Detecting the presence of unnecessary variables, omitted variables and incorrect functional form (Ramsey RESET and Lagrange Multiplier Test for Adding Variables)
    2. Errors of measurement: Consequences and remedial measures
    3. Model Selection Criteria: R^2 and Adjusted R^2 criteria, Akaike's Information Criterion and Schwarz's Information Criterion.
    4. Additional topics in modelling (Outliers, Leverage, Influence; Recursive least Squares; Chow's Prediction Failure Test; Missing Data)
    5. Non-normal errors and stochastic regressors

III. Advanced Topics in Regression Analysis

- i. Dynamic Econometric Models
  - a. Distributed Lag Models: Nature of lagged phenomena, Estimation using Koyck transformation (The Adaptive Expectations and Partial Adjustment Models)
  - b. Estimation of Autoregressive Models
- ii. Instrumental Variable Estimation
  - a. Omitted variables in a simple regression model
  - b. Measurement errors

IV. Panel Data Models and Estimation techniques

The Pooled OLS Regression Model**,** the Fixed Effect Least Squares Dummy Variable Model**,** the Fixed Effect within Group Estimator**,** the Random Effects Model.

V. Introduction to Econometric Software (GRETL/ EViews/ R /Stata/ EXCEL: ANY ONE)

i. Generation of data sets and data transformation; data analysis (Graphs and Plots, Summary Statistics, Correlation Matrix etc.)

ii. Running an OLS regression; Testing for Linear Restrictions and Parameter Stability.

iii. Regression Diagnostics: Collinearity, Autocorrelation, Heteroscedasticity, Normality of residuals

iv. Estimation of Other Linear Models: Weighted Least squares, Cochran-Orcutt/ Hildreth-Lu/ Prais-Winsten etc.

v. Model Selection Criteria (AIC, SIC) and Tests (Adding and Omitting Variables, Non Linearities: Squares, Cubes and Logs, Ramsey's RESET test)

Topic-wise reading list

S.No.	TOPIC	REFERENCES FROM RECOMMENDED TEXT BOOKS
I.	Stages in Empirical Econometric Research	*Chapter 1,Introduction, Section 1.3: 'Methodology of Econometrics' in Gujarati, Porter and Gunasekar, Basic Econometrics, 5th ed.*
II.i.	The Matrix Approach to Linear Regression Model	*Appendix-C: 'The Matrix Approach to Linear Regression Model' in Gujarati and Porter, Basic Econometrics, International 5th ed.*
II.ii.	Review of Functional forms and Qualitative explanatory variable regression models	*Chapter 2 'Functional Forms of Regression Models' and Chapter 3 'Qualitative Explanatory Variables Regression Models in Gujarati, Econometrics by Example.*
II.iii.a	Regression Diagnostics:Detection of, and remedial measures for Multicollinearity, Autocorrelation Heteroscedasticity	*Chapter 4 'Regression Diagnostic I: Multicollinearity',* *Chapter 5 'Regression Diagnostic II: Heteroscedasticity' and* *Chapter 6 'Regression Diagnostic III: Autocorrelation in Gujarati, Econometrics By Example*
II.iii.b	Regression Diagnostics: Model Selection	*Chapter 13 'Econometric Modeling: Model Specification and Diagnostic Testing', Section13.1-13.5 and 13.9-13.12 in Gujarati, Porter and Gunasekar, Basic Econometrics.*
III.a.	Advanced Topics in Regression Analysis: Dynamic Econometric Models	*Chapter 17 'Dynamic Econometric Models: Autoregressive and Distributed-Lag Models' in Gujarati, Porter and Gunasekar, Basic Econometrics.(except 17.9 and 17.13)*
III.b.	Advanced Topics in Regression Analysis: Instrumental Variable Estimation	*Chapter 15 'Instrumental Variable Estimation and Two Stage Least Squares', Section 15.1, 15.2 and 15.4 in Wooldridge, Econometrics*
IV.	Panel Data Models and Estimation Techniques	*Chapter 16 'Panel Data Regression Models' in Gujarati, Porter and Gunasekar, Basic Econometrics*

V.	Introduction to Econometric Software	*1. Chapter 19 'Carrying Out an Empirical Project', in Wooldridge, Econometrics.* *2. Relevant Instruction Manual for the Software*

Recommended textbooks

1. D. N. Gujarati, D.C. Porter and Sangeetha Gunasekar, Basic Econometrics, 5th edition, McGraw Hill, 2012 Indian edition.
2. D. N. Gujarati and D.C. Porter, Basic Econometrics, 5th edition, McGraw Hill, 2012 International edition. (This text book is required only for Topic II i. - The Matrix Approach to Linear Regression Model. Readers can also refer to Gujarati and Sangeetha, Basic Econometrics, 4th edition, McGraw Hill, 2009 Indian reprint. Relevant sections to be studied are same in both text books).
3. Damodar Gujarati, Econometrics by Example, 2nd edition, Palgrave Macmillan, 2014.
4. Jeffrey M. Wooldridge, Introduction to Econometrics: A Modern Approach, 5th Edition, Cengage Learning, 2014.

Student Assessment Summary

Students will have to pass the end-semester exam and the total of the internal assessment and end-semester exam as per university rules to clear the paper.

The end-semester final examination will be of 75 marks. The question paper will consist of seven questions of 15 marks each from Topics I, II, III and IV only. Students will have to answer any five questions.

The software skills of the students will be tested by the teachers during internal assessment and not in the end-semester final exam. The paper setting committee should take a note of this.

Internal assessment will be of 25 marks, divided further as follows:

1. Attendance: 5 marks
2. Class Test/ Assignment: 10 marks
3. Empirical project using the econometric software learnt: 10 marks. (Projects can be done in groups of 2 or 3)