Semester VII Economics (H)

Minutes of the Meeting for ECON019 Quantitative Methods

Date, Time and Location: 5ᵗʰ August 2025, 2 pm (DSE, Room 107)

Conducted By: Prof Rohini Somanathan & Dr. Sourav Sarkar

Attended By:

Name	College
Dr. Surbhi Badhwar	Shyam Lal College (Evening)
Dr. Rakesh Kumar	Motilal Nehru College
Shilpa Chaudhary	Janki Devi Memorial College
Dr. Swarup Santra	Satyawati College
Dr.Basanti kumari Nayak	Satyawati college
Anurag Mallhotra	St. Stephen's College
Priyambada Gupta	Shyam Lal College
Suman Yadav	Shyam Lal College
Dr. BISLA DEVI	Shyamlal College
Chandan Singha	Hindu College
Anuj Goyal	Shaheed Bhagat Singh College
Madhavi Moni K	Hansraj College
Shailu Singh	Hansraj College
Yogesh Malhotra	Sri Venkateswara College
Dr. Surbhi Badhwar	Shyam Lal College (Evening)
Anu Singh Deswal	Sri Aurobindo College (Evening)
Prof. Priti Mendiratta Arora	Maitreyi College
Dr. Deepika Kumari	Shyam Lal College
Rohit	Shri Ram College of Commerce
Navneet Kumar	Aryabhatta College
Narender Thakur	Dr. Bhim Rao Ambedkar College
Himanshi Aggarwal	Shri Ram College of Commerce
Gaganpreet Kaur	SGTB Khalsa College
Shruti Goyal	Zakir Husain Delhi College
Kaustav Saha	Kamala Nehru College
Ajay Kumar	Kamala Nehru college

Nikita Gupta	Shivaji College
Shikha Singh	Daulat Ram College
Sonia Goel	Ramjas College
Prof. Indu Choudhary	Kalindi College

Since the course is being taught for the first time, the main agenda was to discuss the emphasis on the different components of the course and the readings that were central to each topic. It was decided that the focus of the course would be on Units I and II which together will account for roughly two-thirds of the assessment. We decided to keep only a selection of topics from Units III and IV for this year. The topics to be kept are given below.

The books to be used for each unit as essential readings are given below each unit. The list of topics for Units III and IV have been truncated for the coming academic year to give students and teachers the extra time needed to settle into the new curriculum.

For the final exam, it was decided that students would have to do a total of 6 questions out of 7. Each question would carry 15 marks and have at most 2 parts. Internal assessment would be as per DU guidelines.

Syllabus

UNIT I: Methods of Causal Inference (15 hours)
Causality vs. Correlation, Potential Outcomes Framework, Randomized Control Trials (RCTs), Instrumental Variables (IV), Regression Discontinuity Design (RDD), Difference-in-Differences (DiD), Matching Methods (Propensity Score Matching, Synthetic Controls), Case Studies and Applications

- Angrist & Pischke, Mastering Metrics (2014)
- Cunningham, S. Causal inference: The Mixtape (2021) ("Matching and Subclassification" Chapter for Matching Methods)

UNIT II: Regression with Panel Data and Regression with Binary Dependent Variables (8 hours)
Pooled OLS vs Panel Data Models, Fixed Effects vs Random Effects Models, Linear Probability Model (LPM) and its Limitations, Logit and Probit Models, High Dimensional and High Frequency data and its applications in Economic Research

- Stock & Watson, Introduction to Econometrics Fourth Editon Chapters 10, 11 and 14

UNIT III: Analysis of Time-Series Data (10 hours)
Stationarity and Unit Roots, Autoregressive(AR) and Moving Average(MA) Models, ARIMA Models and Forecasting

- Stock & Watson, Introduction to Econometrics Fourth Editon Chapter 15

UNIT IV: Data Collection, Textual Data, Network Data and Spatial Data (9 hours)
Primary vs. Secondary Data, Survey Design and Sampling, Understanding Economic and Social Datasets

- Kosuke Imai, Quantitative Social Science: An Introduction (2018) Section 3.4 "Survey Sampling" (this is the original version which uses R; versions which use STATA or tidyverse are also available)

- Stantcheva, S. (2023). How to run surveys: A guide to creating your own identifying variation and revealing the invisible. *Annual Review of Economics*, *15*(1), 205-234.

Practical & Lab Sessions

Introduction to a software like R/Python etc (Data Wrangling, Visualization, Regression Analysis), Working with Large Datasets (Census, NSS, NFHS, Satellite Data, etc.), Empirical Project: Analyzing a Research Question Using Real Data, Replication of Empirical Papers Using Indian Data Sources