

Quantitative Methods in Development Studies

Lecturer: Kunal Sen

1. Unit aims

This is an introductory course in quantitative research methods for development studies. The overall aim of the course is to enable students, through development of theoretical insights and practical skills, to become critical and competent users of econometric methods and techniques and able and critical readers of academic articles with an empirical content. By the end of the course students should have acquired sufficient knowledge to apply multivariate analysis of cross-section data and time-series analysis to a wide range of macro- and micro-economic problems of economic development.

2. Unit objectives

- The course covers theory, relevant applications and practical exercises in computer workshops. Emphasis is placed on the need to understand and appreciate the interaction between theory testing and theory building. Much emphasis is placed on developing experience and confidence in the use of modern statistical software combining the use of graphical methods with formal tests as powerful diagnostic tools in applied work.
- Students should develop a clear understanding of the theoretical foundation of multiple regression analysis and be able to recognise and effectively address common violations of the standard assumptions of the classical regression model. The course will also develop a basic familiarity with panel data models and instrumental variables estimation methods. It will also provide students with an understanding of the problems and challenges posed by analysis of time-series data.
- Empirical work, using alternative forms of regression analysis, forms an increasingly important foundation for policy analysis and policy advice in economics and other branches of the social sciences, and the competence in this field development through the course will be of great value to development practitioners as well as those aiming for academic and other development-related careers.

3. Outcomes

Subject-related skills – gain a clear understanding of elementary econometric tools for the analysis of cross-section and time-series data.

Competence in the use of and familiarity with modern statistical software: Become confident and competent users of the software package EVIEWS for the conduct of multivariate regression analysis, results interpretation and tests for violations of the assumptions of the classical linear regression model. Similar competence will be

developed for the analysis of probability models and time-series data, and the pooling of cross-sectional and time-series data.

Cognitive skills – ability to read, understand and critically examine empirical work with a basic, econometric content.

4. Teaching methods

There will be 5 lectures of 2 hours each, and 2 computer based lab sessions of 1.5 hours each. The five lectures will cover theoretical foundations and empirical illustrations with reference to relevant micro- and macroeconomic problems of economic development. Two lab sessions will provide students with opportunities to test and develop skills in analysis of relevant economic problems in developing countries.

5. Unit Content and Structure

	Lecture Plan	Topic
Week 7	Lecture 1	Ordinary Least Squares – The classical model- the problem of estimation; inference and interpretation
Week 8	Lecture 2	Violations of the assumptions of the classical model – Diagnostics and remedial actions
Week 9	Lecture 3	Identification strategies; new developments in quantitative development economics
Week 10	Lecture 4	New developments in quantitative development economics (continued), overview of the basic properties of panel data regression analysis
Week 11	Lecture 5	Time-series Data: Trends, Spurious Regressions and Non-stationary Data

7. Readings

Key Texts:

Gujarati, D. N. (1995): *Basic Econometrics*, 4th or later editions, *Mc Graw Hill*, New York (Selected chapters).

Mukherjee, C., H. White and M. Wuyts (1998): *Econometrics and Data Analysis for Developing Countries*, *Routledge*, London.

Lecture 1: Ordinary Least Squares – The Classical Model – Theory and Estimation; Inference and Interpretation.

Gujarati, Chapters 1-5.

Mukherjee et al, Chapters 1-5.

M. McAleer (1994), “Sherlock Holmes and the Search For Truth : A Diagnostic Tale”, *Journal of Economic Surveys*, Vol. 8, pp. 317-370.

Becker, W. E. and W. H. Greene (2001): “Teaching Statistics and Econometrics to Undergraduates,” *Journal of Economic Perspectives*, Vol 15 (4), pp. 169-182.

Barro, Robert J. (1991): “Economic Growth in a Cross-Section of Countries,” *Quarterly Journal of Economics*, 106 (2), pp. 407-443.

Lecture 2: Violations of the assumptions of the classical model – diagnostics and remedial measures; mis-specification and autocorrelation.

Gujarati, Chapters 7, and 9-11.

Mukherjee et al., Chapters 6 and 7.

Lecture 3: Identification strategies; Impact evaluations; new developments in quantitative development economics: randomised control trials.

Gujarati, Chapters 8 and 13.

E. Leamer (1983), “Lets take the con out of econometrics”, *American Economic Review*, Vol. 73(1), pp. 31-43.

J. Angrist and J-S Pischke (2010), « The Credibility Revolution in Empirical Economics : How Better Research Design is taking the con out of econometrics ? », *Journal of Economic Perspectives*, Vol. 24(2), pp. 3-30.

E. Leamer (2010), “Tantulus on the Road to Asymptotia”, *Journal of Economic Perspectives*, Vol. 24(2), pp. 31-46.

- M. Keane (2010), "A Structuralist Perspective on the Experimentalist School", *Journal of Economic Perspectives*, Vol. 24(2), pp. 47-58.
- A. Deaton (2010), "Instruments, Randomization and Learning about Development", *Journal of Economic Literature*, Vol. 48, pp. 424-455.
- Joshua D. Angrist and Jörn-Steffen Pischke (2009), *Mostly harmless econometrics: an empiricist's companion*, Princeton University Press, Princeton, Chapters 1-4.
- Centre for Global Development (2009), *When will we ever learn? Improving lives through impact evaluation*, available on www.cgdev.org.
- R. Chambers et al. (2009), *Designing Impact Evaluations : Different Perspectives*, 3ie working paper no. 4, available on: <http://www.3ieimpact.org>.
- H. White (2009), *Some Reflections on Current Debates on Impact Evaluation*, 3ie working paper no. 1, available on: <http://www.3ieimpact.org>.
- UNICEF (2010), *Measuring policy effectiveness through impact evaluation*, available on [http://www.unicef.org/socialpolicy/files/Insights_jan2010_ENG\(2\).pdf](http://www.unicef.org/socialpolicy/files/Insights_jan2010_ENG(2).pdf)
- D. Acemoglu, S. Johnson and J. Robinson (2001) 'The Colonial Origins of Comparative Development'. *American Economic Review*, 91 (5).
- J. Angrist, E. Bettinger, E. Bloom, E. King and M. Kremer (2002) "Vouchers for Private Schooling in Colombia: Evidence from a Randomized Natural Experiment," *American Economic Review*, vol. 92(5), pages 1535-1558, December.
- R. Burgess and R. Pande (2005), "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment", *American Economic Review*, , Vol. 95(3).
- E. Duflo, (2001), "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," *American Economic Review*, vol. 91(4): 795-813.
- E. Duflo and R. Chattopadhyay) (2004), "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India," *Econometrica*. Vol. 72(5): 1409-1443.
- E. Duflo and R. Pande (2007), "Dams", *Quarterly Journal of Economics*, vol. 122(2), pp.601-646.
- M. Kremer, P. Glewwe, S. Moulin and E. Zitzewitz (2004), "Retrospective vs. Prospective Analyses of School Inputs: The Case of Flip Charts in Kenya," *Journal of Development Economics* Vol. 74:1, 251-268.

Optional:

Mukherjee et al., Chapters 13 and 14.

Lecture 4: New developments in quantitative development economics (continued), overview of the basic properties of panel data regression analysis.

Gujarati, Chapter 16.

Mukherjee et al., Chapter 11.

Optional :

Greenaway, D. et al. (2002), "Trade Liberalisation and Growth in Developing Countries", *Journal of Development Economics*, Vol. 67, pp. 229-244, available online.

Hussein, K.A. and A.P. Thirlwall (1999), "Explaining Differences in the Domestic Savings Ratio Across Countries: A Panel Data Study", *Journal of Development Studies*, Vol. 36, No. 1, pp. 31-52.

Lecture 5 : Time-series data: trends, spurious regressions and non-stationary data; co-integration.

Mukherjee et al., Chapter 10.

Gujarati, Chapters 12 and 21.

Enders, W. (1995), *Applied Econometric Time Series*, Chapters 4 and 6.

Granger, C.W.J., and Newbold, P. (1974) "Spurious Regressions in Econometrics", *Journal of Econometrics*, Vol. 2, pp. 111-120.

Optional:

Jones, C.I. (1995), "Time-series Tests of Endogenous Growth Models", *Quarterly Journal of Economics*, Vol. 110, pp. 495-525.

Athukorala, P. and K. Sen (2004), "The Determinants of Private Saving in India", *World Development*, 2004, Vol. 32, No. 3, pp. 491-503

Krishnan, R. and K. Sen (1995), "Measuring Persistence in Industrial Output: the Indian case", *Journal of Development Economics*, Vol. 48, No. 1, pp. 25-41