Econometrics
Fudan University

Yoosoon Chang
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Econometrics

The course is intended to teach extensively and rigorously the linear models, covering classical single equation models, multivariate regression models, seemingly unrelated regressions, panel data models, and simultaneous equation models. There is no required textbook for the course, and the lectures will follow closely the notes to be distributed at the beginning of the course. For supplemental reading, the following books may serve as good references:

Basic Textbooks

Hayashi, F., *Econometrics*, Princeton University Press, 2000.

Greene, W.H., *Econometric Analysis*, 7th ed., Prentice Hall, 2011.

Davidson, R. and J.G. MacKinnon, *Econometric Theory and Methods*, Oxford University Press, 2004.

Wooldridge, J.M., *Econometric Analysis of Cross Section and Panel Data*, 2nd ed., MIT Press, 2008.

Goldberger, A., *A Course in Econometrics*, Harvard University Press, 1991.

Sargan, D., *Lectures on Advanced Econometric Theory*, Basil Blackwell, 1988.

Reference Books

Billingsley, P., *Probability and Measure*, 3rd ed., Wiley, 1995.

Dhrymes, P.J., *Topics in Advanced Econometrics: Probability Foundations*, Springer-Verlag, 1989.

Dhrymes, P.J., *Topics in Advanced Econometrics: Vol II. Linear and Nonlinear Simultaneous Equations*, Springer-Verlag, 1994.

Gallant, R.A., *An Introduction to Econometric Theory*, Princeton University Press, 1997.

Halmos, P.R., *Finite-Dimensional Vector Spaces*, Springer-Verlag, 1974.

Magnus, J.R. and H. Neudecker, *Matrix Differential Calculus with Applications in Statistics and Economics*, John Wiley & Sons, 1988.

Muirhead, R.J., *Aspects of Multivariate Statistical Theory*, John Wiley & Sons, 1982.

White, H., *Asymptotic Theory for Econometricians*, Academic Press, 1984.

Course Contents

Part I: Multivariate Linear Models

1. Multivariate Regression Models

The Model, Multivariate LS Estimation, ML Estimation, Statistical Properties of the Estimators, Hypothesis Testing.

2. Seemingly Unrelated Regressions (SUR)

The Model, Estimation, Equivalence of SUR and Single-Equation LS.

3. Regressions with Panel Data

The Model, Fixed Effects Models, Random Effects Models.

Part II: Simultaneous Equation Models

1. Specification

The Model, Identification, Reduced Form (RF) and Structural Form (SF) Models, Representation.

2. Identification

Characterization of Observational Equivalence, First-Order Identification, Second-Order Identification, Identification of Sub-Structures, Identification of Sub-Structures with Zero-Covariance Restrictions.

3. Estimation by OLS and Indirect Least Squares (ILS)

The OLS and Simultaneous Equation Bias, ILS.

4. IV Estimation

Instrumental Variables, Single Equation IV Estimation, System IV Estimation.

5. ML Estimation

Full Information Maximum Likelihood (FIML) Procedure, Limited Information Maximum Likelihood (LIML) Procedure.