

Master in Finance, Insurance and Risk Management

ECONOMETRICS – 2017-18

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- Level
- Prerequisites
 - Matrix Algebra (Greene, Appendix A or Verbeek, Appendix A)
 - Probability and Distribution Theory (Greene, Appendix B or Verbeek, Appendix B)
 - Statistical Inference (Greene, Appendix C)
- Course Structure
 - Econometrics Lectures (30 hours)
- Material
 - Lecture Notes
 - References
- Exam
 - Written exam based on the material covered both in lectures

Program

- Part 0: Introduction to Econometrics
 - What is Econometrics?
 - Econometric Modelling
 - Why to perform econometric analyses?
- Part 1: The Classical Linear Regression Model
 - The Model: Linearity, Strictly Exogenous Regressors, No Multicollinearity, Spherical Error Variance
 - The Algebra of Least Squares
 - Finite-Sample Properties of the Ordinary Least Squares (OLS) Estimator
 - Hypothesis Testing under Normality (t -Statistic and F -Statistic) and Prediction
 - Topics in Specification Analysis
 - Relation to Maximum Likelihood
- Part 2: The Generalized Linear Regression Model
 - The Model: Linearity, Strictly Exogenous Regressors, No Multicollinearity, Non-spherical Error Variance
 - Finite Sample Properties of the OLS Estimator
 - The Generalized Least Squares (GLS) Estimator
 - Finite Sample Properties of the GLS Estimator
 - Limiting Nature of the GLS Estimator
- Part 3: Large Sample Theory
 - Limit Theorems for Sequences of Random Variables
 - Fundamental Concepts in Time-Series Analysis (Stationarity, Ergodicity, Martingale Difference Sequences)
 - The Model: Linearity, Ergodic Stationarity, Predetermined Regressors, Rank Condition, Asymptotic Normality
 - Large Sample Properties of the OLS Estimator
 - Hypothesis Testing (Robust t -Statistic and Wald Statistic)
 - Implications of Conditional Homoskedasticity

- Testing for Conditional Homoskedasticity and Serial Correlation
- Part 4: The Generalized Method of Moments (GMM)
 - Endogeneity Bias and Errors in Variables
 - The Model: Linearity, Ergodic Stationarity, Orthogonality Conditions, Rank Condition, Asymptotic Normality
 - The GMM Estimator
 - Large Sample Properties of the GMM Estimator
 - Hypothesis Testing (Robust t -Statistic and Wald Statistic)
 - Testing Overidentifying Restrictions
 - Weak instruments

References

Two main references:

1. Hayashi, F. “Econometrics”, Princeton University Press, 2000, chap. 1-3.
2. Greene, W.H. “Econometric Analysis”, 7th edition, Prentice Hall, 2012

Two “more friendly” references:

1. Verbeek, M. “A guide to modern econometrics”, Wiley, 2012 (2008), 4th (3rd) ed., chap. 1-5.
2. Stock, J. - Watson M. “Introduction to Econometrics”, Pearson, 2012, 3rd ed.