Refreshment or Preliminary Courses for M.Sc. and Ph.D.2022/2023

ECONOMETRICS

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Syllabus

1. **Introduction**
   - 1.1. The notion of econometrics
   - 1.2. Theoretical models and empirical models
   - 1.3. Economic data
   - 1.4. Causality and the notion of ceteris paribus
   - 1.5. Steps in performing an empirical study

2. **Data Analysis with Stata**
   - 2.1. Introduction to Stata
   - 2.2. Data exploratory analysis

3. **The Multiple Linear Regression Model (MLRM) and Ordinary Least Squares (OLS) (W3) with STATA**
   - 3.1. Introduction
   - 3.2. The MLRM
   - 3.3. The OLS estimator
   - 3.4. Interpretation of OLS estimates for different functional forms
   - 3.5. Estimation of the variance of the error term
   - 3.6. Goodness of fit
   - 3.7. Assumptions and properties of OLS

4. **Inference in the Multiple Linear Regression Model (W4) with STATA**
   - 4.1. Introduction
   - 4.2. Sampling distributions of the OLS estimators
   - 4.3. Confidence intervals
   - 4.4. Testing Hypotheses about a single coefficient: the *t* test
   - 4.5. Testing Hypotheses about a single linear combination of the coefficients
   - 4.6. Testing Hypotheses about multiple linear restriction: The *F* test

5. **Additional Topics with STATA**
   - 5.1. Multiple Regression Analysis with Qualitative Information: Dummy variables (W7)
     - 5.1.1. Describing Qualitative Information
     - 5.1.2. A Single Dummy Independent Variable
     - 5.1.3. Using Dummy Variables for Multiple Categories
   - 5.2. Heteroscedasticity (W8)
     - 5.2.1. Definition of Heteroscedasticity and consequences for OLS estimators
     - 5.2.2. Heteroscedasticity-robust inference after OLS estimation of the coefficients
     - 5.2.3. Testing for heteroscedasticity
   - 5.3. Testing for functional form misspecification: The RESET test

6. **Topics on Regression with Time Series Data (W10) with STATA**
   - 6.1. The Nature of Time Series Data (W10.1)
   - 6.2. Examples of Time Series Regression Models (W10.2)
   - 6.3. Stationary and Weakly Dependent Time Series (W11.1)
   - 6.4. Finite Sample Properties of OLS under Classical Assumptions (W10.3)
   - 6.5. Trends and Seasonality (W10.5)
   - 6.6. Serial correlation (W12)

TEXTS

— **Principal**

— Wooldridge, J. M. (2020) [W], *Introductory Econometrics: A Modern Approach*, 7th. ed., South Western, Cengage Learning.

— **Auxiliary**

— Greene, W. (2018). *Econometric Analysis*, Pearson Education Limited, 8th Edition, Global Edition,

— Goldberger, A. (1991). *A Course in Econometrics*, Harvard.

— Hayashi, F. (2000). *Econometrics*. Princeton University Press.

— Silva Ribeiro, C. (2014). Econometria, Escolar Editora.

— Stock, J.H. and Watson, M. W. (2015). Introduction to Econometrics, 3rd updated Ed., Pearson Education.

— Verbeek, M. (2018). A Guide to Modern Econometrics, 5th Ed., Wiley.