Econometrics

Root Number: 507711 – HS2025

Semester: Fall semester - HS 2025

ECTS: **3** ECTS

Lecturers: Octavio Fernández-Amador

Dates: Please see details on pages 11, 12, 13 and 14

Audience:

- Master of Advanced Studies of International Law and Economics (MILE) Students – Compulsory
- Joint LL.M. / Diploma of Advanced Studies Trade and Investment Law (TRAIL+) Students - World Trade Institute / Faculty of Law, Unibe - Compulsory
- This course is not open to MILE a la Carte

CONTENTS

COURSE DESCRIPTION

This course will provide the students with a solid foundation for the course on international trade theory in the second semester. During the final part of the course the students will be introduced to the basics of applied econometrics in combination with the use of the statistical software STATA.

Econometrics

The objective of the course is two-fold: First, enabling students to interpret output tables from econometric analysis in academic research papers and to work with their own datasets. The lessons learned from the econometrics module can be used in subsequent economics courses in the MILE program and by students when working on take-home essays or their specific thesis projects. Second, beyond the confines of the MILE program, students will acquire skills in using the statistical software STATA, which is in high demand among employers both in the private and public sector.

These considerations resonate well with the feedback from former MILE cohorts: The students who enrolled in the previous econometrics modules indicated that they see quantitative approaches to international trade as a stepping stone for their thesis projects or potential future employment. Throughout the course, emphasis will be placed on the intuition behind econometric analysis. The main goal will be to communicate to the students the merits of using a certain model as well as the main procedures through which results are obtained.

The course comprises eight lectures of 2 hours each (16 hours in total) plus a final examination. The module is structured as follows: The first session will be devoted to the basics of data analysis. Students will learn how to feed data into the statistical software STATA, to calculate descriptive statistics and to plot graphics of interest. Students are required to practice the use of the learned commands and apply them in practical exercises. The introductory lecture will be followed by lectures on the most simple linear regression models and the procedure of statistical inference. Throughout the course, emphasis will be placed on the intuition behind econometric analysis. The course is intensive, and students are required to revise the material at home.

Note: Due to the strong focus on hands-on learning, students must make sure that STATA is properly installed in their laptops before the beginning of Econometrics classes. The software will be provided by the WTI.

Lecturer

Octavio Fernández-Amador

Octavio Fernández-Amador is a senior researcher at World Trade Institute. He achieved his Habilitation from the University of Bern (Switzerland) and holds a PhD in Economics from the University of Innsbruck (Austria) and a degree in Economics from University of Sevilla (Spain). He has previously worked as a Postdoc Assistant Professor at Johannes Kepler University Linz (Austria). Octavio has collaborated in projects with different institutions. His field of research is applied econometrics and macro-econometrics. He has worked on international macroeconomics, trade, monetary economics, applied econometrics, time series analysis, and the quantitative analysis of climate change. Octavio has published in various international scientific journals.

LEARNING OBJECTIVES

Econometrics

- Understand the basics of econometrics in combination with the STATA software.
- To be able to understand and utilize the empirical (econometric) approaches to the study of international trade.

RECOMMENDED LITERATURE

- Wooldridge, J. (2016): Introductory Econometrics: A Modern Approach. 6th Edition. Cengage.

Note: We will deliver additional readings in advance to help understand basic concepts related to the lectures and to supplement the compulsory readings either during the class or for the exercises proposed. The readings delivered will be considered part of the material to prepare the exam, unless the instructor excludes them from being part of the content of the exam.

EXAMS AND GRADES

10% of the grade will be based on participation.

45% on a final exam, and 45% on the course project (replication exercise as explained in class).

COURSE OVERVIEW

Lesson	Date	Week day	Subject	Hours	Time	Lecturer	Topic	Reading
Econ1	10.06.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	The STATA environment	Rodriguez, G. STATA Tutorial
Econ2	10.13.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Simple linear regression model	Wooldridge Ch1 & 2
Econ3	10.20.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Multiple linear regression model	Wooldridge Ch 3
Econ4	10.27.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Statical Inference	Wooldridge Ch 4
Econ5	11.03.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Non-Linearities & Interaction Effect	Wooldridge Ch 6
Econ6	11.10.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Heteroscedasticity & Panel data	Wooldridge Ch 8 & 13
Econ7	11.17.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Panel data and endogeneity	Wooldridge Ch 14 & 15
Econ8	11.24.25	Mon	Econometrics	2	09:30-11:30	O. Fernández-Amador	Logit and Probit models for binary response	Wooldridge Ch 17 (section 1)
ECON	12.01.25	Mon	Econometrics	2	09:30-10:30 10:30–11:30	O. Fernández-Amador	Exam Guidelines Home assignment	
ECON	01.06.26	Mon	Take Home Exam			O. Fernández-Amador	Home assignment (project)	

ECON1	OCTOBER 06
Econometrics	**(O. Fernández-Amador)**

Topics:

- The STATA Environment
  - User surface and basic navigation
  - Dataset structures (cross-section, panel, bilateral data, time series)
  - Data import
  - Command syntax (saving commands, data manipulation, …)
  - Graphs

Suggested Reading Materials:

- Rodriguez, G. STATA Tutorial, available at: http://data.princeton.edu/stata/

ECON2	OCTOBER 13
Econometrics	**(O. Fernández-Amador)**

Topics:

Simple Linear Regression Model

- Intuition
- Mechanism of estimation (OLS)
- Output interpretation
- Model quality (R2)

Compulsory Reading Material:

Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA. Chapters 1 and 2.

ECON3	OCTOBER 20
Econometrics	**(O. Fernández-Amador)**

Topics:

- Multiple Linear Regression Model
    - Intuition
    - Mechanism of estimation (OLS)
    - Output interpretation
    - Model quality (R2 and adjusted R2)
    - Omitted variable bias
    - Multicollinearity

Compulsory Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA. Chapter 3

ECON4 **OCTOBER 27**

Econometrics (O. Fernández-Amador)

Topics:

- Statistical Inference
    - Rationale for hypothesis testing
    - Mechanism of hypothesis testing

Compulsory Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA. Chapter 4.

ECON5	NOVEMBER 3
Econometrics	**(O. Fernández-Amador)**

Topics:

- Non-Linearities & Interaction Effects
    - Functional form
    - Scaling and beta coefficients
    - Dummy variables
    - Interaction effects: One and two regressors

Compulsory Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA. Chapter 6.

ECON6	NOVEMBER 10
Econometrics	**(O. Fernández-Amador)**

Topics:

- Recap and short introduction to further concepts

  (Note: depending on time, one or more of the following topics may be discussed)

  - Heteroscedasticity
  - Fixed effects

Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA.
  - Heteroscedasticity: Chapter 8
  - Fixed effects: Chapter 13

ECON7	NOVEMBER 17
Econometrics	**(O. Fernández-Amador)**

Topics:

- Recap and short introduction to further concepts

  (Note: depending on time, one or more of the following topics may be discussed)

  -
  - Fixed effects
  - Endogeneity

Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA.
  -
  - Fixed effects: Chapter 14
  - Endogeneity: Chapter 15

ECON8	NOVEMBER 24
Econometrics	**(O. Fernández-Amador)**

Topics:

- Logit and Probit models for binary response

Reading Material:

- Wooldridge, J.M. (2016), Introductory Econometrics: A Modern Approach (6th edition), Cengage Learning, Boston, USA. Chapter 17.1.