Financial Econometrics: Introduction

Daniele Bianchi[1]

whitesphd.com

[1]School of Economics and Finance
Queen Mary, University of London

Reading material

Financial Econometrics is a field which is relatively broad.

— For this course we do not follow any particular textbook.

— Readings will be based on original research work and existing textbooks.

Throughout the module I will refer to examples/insights from few textbooks:

— *"Using Python for Introductory Econometrics"*, by Daniel Brunner and Florian Heiss (2020).

— *"Financial Econometrics Notes"*, by Kevin Shepard (2020), freely available at **https://www.kevinsheppard.com/teaching/mfe/notes/**.

— *"Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk, with Implementation in R and Matlab. 1st Edition,"* by Jon Danielson (2011).

Syllabus

Topic 1: Random variables and expectations

Topic 2: Estimation, inference and hypothesis testing

Topic 3: Regression analysis: Part I

Topic 4: Regression analysis: Part II

Topic 5: Analysis of single time series: Part I

Topic 6: Analysis of single time series: Part II

Topic 7: Univariate volatility modeling: Part I

Topic 8: Univariate volatility modeling: Part II

Topic 9: Value-at-Risk, Expected shortfall and density forecasting

Topic 10: Multivariate volatility and dependence

Objective and learning outcomes

The aim of this course is to provide a rigorous training in the modern use of financial econometrics to forecast and manage risks in financial markets.

More specifically, the module covers the central concepts of financial time-series analysis, univariate and multivariate volatility modelling, risk measures and an introduction to machine learning methods for the analysis of financial risks.

Practice classes and tutorials will be based on Python programming.

Four-fold objective:

- Use of econometric techniques for empirical analysis.
- Critically evaluate the informativeness of empirical estimates.
- Visualize complex information sets.
- Introduction to some applications in financial markets.