



Seminar Advances in Empirical Finance Winter Semester 2021/2022

University of Freiburg

Institute of Economics

Department of Statistics and
Econometrics

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1. Goal

The goal of this seminar is to acquaint master students with advanced and modern econometric methods and their applications to research questions related to financial econometrics, quantitative risk management, high-dimensional and high-frequency finance as well as machine learning in empirical finance.

During the work on the seminar the students learn a new quantitative methodology and apply it to solve theoretical or empirical problems in finance. In particular, besides acquiring deep theoretical knowledge on modern advanced econometric and machine learning methods, the students undergo complex empirical analyses on real (usually big) financial data by means of standard and advanced econometric tools as well as by means of self-developed programming codes.

The topics can be individually adapted to allow for being pursued further in a subsequent master thesis.

2. Seminar Website

<https://www.econometrics.uni-freiburg.de/en/teaching/wt-21-22/seminar-advances-in-empirical-finance>

3. Basic requirements

1. Successful completion of the classes Intermediate Econometrics and Time Series Analysis
2. Good knowledge in a programming language (R, Python, Matlab, etc.)
3. Parallel enrolment in Financial Econometrics and/or Advanced Topics in Econometrics is highly recommended

4. Organizational Issues

- The maximum number of participants is limited to ten.
- A preliminary registration at the Chair of Statistics and Econometrics is required!

- For the preliminary registration, please fill in the formulary on the seminar's website and send it together with your transcript of records to conny.hupfer@vwl.uni-freiburg.de until **October 8th, 2021** at the latest.
- On **October 12th, 2021** we will inform by email the students who can take part in the seminar.
- On **October 19th, 2021** at **4pm** we will have the first meeting of the seminar, where we will present you in detail the topics of the seminar. The meeting is planned to take place in person, however an online participation is also possible.
- Tentative topics:
 1. Predicting financial profits or losses: a cluster analysis approach
 2. Use the heartbeat of the market to predict financial risks by means of realized volatilities, value-at-risk and expected shortfall
 3. How realistic is the arbitrage on financial markets? A statistical approach
 4. Chasing the normality on the financial markets: a blessing or a curse.
 5. Capturing the latency in financial modelling by means of observation-driven and artificial neural network techniques
 6. Modelling and estimating time varying high-dimensional risks by means of observation-driven and artificial neural network techniques
 7. Using textual analysis to predict extremes on financial markets
 8. Can textual analysis explain the housing prices? An econometric approach
- It is highly desired that you work on a topic jointly with another colleague.
- Students will have time until **October 26th, 2021** to find a partner and choose a topic or to withdraw from the seminar. If you withdraw from the seminar after this deadline, you will receive the grade 5.0.
- Each topic has a supervisor from our chair. Please keep contact with the supervisor during working on the topic in order to get feedback on your progress.
- The presentations of your research on the seminar's topic will take place from **April 13th to April 14th, 2022**.
- One week before the presentations, you should submit the seminar papers. The joint seminar papers should not exceed 25 pages, while the single ones should not exceed 15 pages.
- The presentations will consist of 25 minutes of paper presentation, 5 minutes of discussion of a fellow student's paper, plus 10 minutes of open discussion.
- ECTS: 6 credits