Syllabus

Empirical Asset Pricing
Summer Semester 2021
Universität Hamburg

(Version: April 1, 2021)

Lectures: Tuesdays 10:00-12:00 (c.t.)
Zoom meeting link:
https://uni-hamburg.zoom.us/j/99927668605?pwd=TXZ2eXlWbWltSDJoNS8yM2hDVjZGQT09

Course website: https://www.openolat.uni-hamburg.de/auth/RepositoryEntry/168460621
Final project: Term paper due Friday, Juli 23, 2021.

Instructors:

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Office hours: By appointment.

Our website: www.wiso.uni-hamburg.de/bauer

Course description

This course is an introduction to empirical asset pricing. It focuses on methods for investigating financial market data and on important stylized facts in empirical finance. The material covers classic empirical finance topics related to bond and stock markets. In addition, the course will provide a macro-finance perspective: Two central themes will be the role of monetary policy for financial markets and the importance of macroeconomic fundamentals for asset prices, interest rates and risk premiums.

Learning goals

One central goal of the course is to give students a broad overview of important topics in empirical asset pricing, quantitative finance and macro-finance. At the end of the course, students will have a solid understanding of the big picture and big open questions in academic financial research.

Because the focus of the course is on empirical methods, another important goal is for students to learn new quantitative methods for analyzing financial data. They will become familiar with tools from empirical finance, time series econometrics, and financial econometrics.

The lectures are **interactive**. For achieving the learning goals, students should actively participate in the lectures and class discussions, prepare course materials outside class, read original research papers, solve problem sets and complete an independent empirical project. In short, to understand the material, students should apply it in their own work.

Course logistics

The summer semester 2021 will be a digital or hybrid semester with predominantly digital lectures and meetings. In this course this will look as follows:

- The lectures will be held as Zoom meetings, allowing for active participation and discussions.
- All course materials will be made available digitally on OpenOLAT.
- The lecture slides will be available before each lecture.
- The problem sets (see below) will be distributed via OpenOLAT and submitted via email.
- Office hours can be scheduled by appointment, and will be digital via Zoom.
- Depending on the situation of the Covid pandemic, and taking into account the constraints and locations of the course participants, some in-person lectures or meetings may be possible.

Assessments

Problem Sets

There will be regular problem sets, about one every two weeks. Students are expected to work on the problems and submit their written solutions via email.

- Working in groups is allowed, but every student has to hand in their own solution. If you work in a group, please indicate the group members on your submission.
- You must submit one single PDF file via email to Daniel Huber.
- Late assignments will not be accepted or graded.

The problem sets will often require you to carry out empirical analysis or simulations using statistical software packages on your computer. You are free to use any software package, but we recommend R, Python, Matlab or Julia.

Final Project

To pass the course, students must carry out an empirical project and write a short term paper on it (max. 15 pages).

- Projects can be completed individually or in groups of up to four students.
- Each student/group will give a short (10min, max. 4 slides) presentation on their project, describing the basic idea of the project and preliminary results. The presentations will be scheduled in June.

- The term papers need to satisfy the usual standards for scientific writing, including accurate references to the relevant literature, clear description of the data and methodology, inclusion of tables/figures showing the results, etc.
- The term papers are due Friday, July 23.

Students should strive to clearly answer the following questions in their project and term paper:

- What is the research question? Why is this question interesting? How has this question previously been addressed and answered in the academic literature?
- What empirical methods are used in the analysis?
- Where does the data come from and how has it been processed?
- What are the key empirical results? Are the estimated effects statistically significant? Are they large in economic terms?
- What do the empirical results imply for answering the research question? Are there broader implications?
- What are potentially fruitful directions for future research?

Grading Policy

The course will be graded on the usual grading scale with passing grades from 1.0 (very good) to 4.0 (sufficient), and with a failing grade 5.0 (insufficient). The grade will be determined as follows:

- Class participation: 10%
- Problem sets: 30%
- Final project: 60%

Textbooks and other reference material

- Required textbook:
  - Cochrane (2005), *Asset Pricing, Revised Edition*
- Recommended textbooks:
  - Campbell (2017), *Financial Decisions and Markets: A Course in Asset Pricing*
  - Campbell et al. (1997), *The Econometrics of Financial Markets*
  - Duffie (2010), *Dynamic Asset Pricing Theory*
- Surveys:
  - Cochrane (2011), "Discount Rates"
    Cochrane's AFA presidential address, an excellent summary of key findings and open questions in empirical asset pricing
  - Cochrane (2017), "Macro-Finance"
    Survey of the literature on the equity premium puzzle and macro-financial linkages

  - Gürkaynak and Wright (2012), "Macroeconomics and the Term Structure"
    Survey of yield-curve modeling with a focus on macro-finance and monetary policy

- Time Series Econometrics:

  - Hamilton (1994), *Time Series Analysis.*
    Indispensable reference for empirical work in macroeconomics and finance.
  - "Time Series for Macroeconomics and Finance," John Cochrane, lecture notes, https://www.johnhcochrane.com/s/time_series_book-pc3b.pdf.
    Summary of essential time series tools.

Topics

This agenda is tentative and subject to change.

1. Introduction and Consumption CAPM (Bauer)
2. Foundations: the stochastic discount factor and risk premiums (Bauer)
3. Factor models: CAPM and Fama-French (Huber)
4. Predictability of stock returns (Huber)
5. The equity premium puzzle and macro-finance linkages (Bauer)
6. Bond markets, the yield curve, and bond risk premiums (Bauer)
7. Modeling the yield curve: dynamic term structure models (Bauer)
8. The term structure of equity yields (Huber)
9. Monetary policy and event studies of FOMC announcements (Bauer)
10. Options and implied moments (Bauer)

The ***required and recommended readings*** for each topic will be listed in the lecture slides. These slides will be available on OpenOLAT before each lecture.

If there is time, we may touch on the additional topics, such as

- Corporate bonds and the credit spread puzzle
- Incomplete information and learning
- Machine Learning and Asset Pricing

References

Campbell, John Y. (2017) *Financial Decisions and Markets: A Course in Asset Pricing*: Princeton University Press.

Campbell, John Y., Andrew Wen-Chuan Lo, and Archie Craig MacKinlay (1997) *The Econometrics of Financial Markets*: Princeton University Press.

Cochrane, John H. (2005) *Asset Pricing, Revised Edition*: Princeton University Press.

Cochrane, John H (2011) "Presidential address: Discount rates," *Journal of Finance*, Vol. 66, pp. 1047–1108.

——— (2017) "Macro-finance," *Review of Finance*, Vol. 21, pp. 945–985.

Duffie, Darrell (2010) *Dynamic Asset Pricing Theory*: Princeton University Press.

Gürkaynak, Refet S. and Jonathan H. Wright (2012) "Macroeconomics and the Term Structure," *Journal of Economic Literature*, Vol. 50, pp. 331–367.

Hamilton, James D. (1994) *Time Series Analysis*: Princeton University Press.