

FINANCIAL ECONOMETRICS

Prof. dr. Melenberg

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Course Outline

The use of quantitative methods in financial markets has experienced an extraordinary growth over the past three decades. Nowadays finance professionals routinely use sophisticated statistical techniques, many of which are at the frontier of academic research. The purpose of this course is to present some of the most important econometric methods usually employed in financial markets. In particular, it contains a thorough analysis of some of the statistical techniques applied to portfolio management, financial consulting, and risk control. The course builds on the Generalized Methods of Moments estimation method and applies it to problems in asset pricing. Students will learn how to use GMM for estimation / testing of asset pricing models. Particular attention will go to estimation of the standard errors (heteroskedasticity correction, heteroskedasticity and autocorrelation correction). Among others, the CAPM, Fama-French 3 and 5 factor model will be treated. Other topics treated include: Predictability in asset returns, the equity premium puzzle (and possible explanations). Volatility models such as ARCH and GARCH will be discussed and their estimation worked out. Finally, Term-structure models will be estimated using the GMM framework.

At the end of the course, Participants will be able to:

- confidently use GMM estimation and testing techniques
- understand which considerations to take into account by selecting the appropriate moment conditions in GMM
- apply GMM to asset pricing models
- estimate ARCH / GARCH models
- estimate empirical term-structure models

Course Structure

Introduction

- a Review of OLS and underlying assumptions
- b Review of asset pricing models
- c Overlapping-samples problems
- d Estimation of the spectral density
- e GLS vs OLS

GMM based testing asset pricing models

- a CAPM, FF3, FF5
- b Estimation of Linear asset pricing models using GMM
- c Estimation of non-linear asset pricing models using GMM
- d Equity premium puzzle and alternatives

Volatility Models

- a Stylized facts
- b ARCH / GARCH model estimation using GMM

Empirical Term Structure Models

- a Affine term-structure models
- b Estimation of short-rate models using GMM