Financial Econometrics:

- Econometric/statistical analysis of finance data.

Our course:

- Focus on models to analyse financial market data in particular stock and portfolio returns.
- Primary objective of these models is to predict “risk measures” such as volatility and value at risk.
- Learn to implement these models.
- Learn basic theoretical results of these models and their parameter estimators.
- Previous knowledge of times series analysis and/or stochastic processes is helpful but not mandatory.
Stylized facts: What’s so special about return data?

- Looks like white noise
  $\Rightarrow$ Classical time series models are useless.

- Autocorrelation in higher moments
  $\Rightarrow$ Data is not independent.

- Heavy-tailed and asymmetric marginal distributions
  $\Rightarrow$ Normal distribution is a poor approximation.

- Correlation of returns across different assets often tail- or time-dependent.
Tentative overview

Course Structure:

- Introduction and stylized facts.
- Basic concepts from time series analysis such as stationarity and ARMA models.
- Volatility models in particular GARCH model:
  - Definition, properties and estimation.
- Multivariate extensions:
  - MGARCH, portfolio theory and copula based models.
- Modern topics: High-frequency data and realized volatility.
Lectures:
➢ Presumably online every Thursday 14:00 - 16:00

Exercises:
➢ Bi-weekly. Presumably held online by Maxime Faymonville. Date to be decided.
➢ You will be expected to hand in your solutions and these will be graded.

Material:
➢ Lecture slides.
➢ No course book or manuscript. Additional helpful reading will be given during the course.