# University of St.Gallen

## Course and Examination Fact Sheet: Spring Semester 2018

## 8,154: Financial Econometrics

## ECTS credits: 4

## Overview examination/s
(binding regulations see below)
Decentral - Group examination paper (all given the same grades) (50%)
Decentral - Written examination (50%, 60 mins.)

## Attached courses
Timetable -- Language -- Lecturer
8,154,1.00 Financial Econometrics -- Englisch -- Söderlind Paul

## Course information

### Course prerequisites
Some basic knowledge of **statistics** (hypothesis testing, distributions and their moments), **linear algebra** (vectors and matrices) and **financial theory** (CAPM, market volatility, basic portfolio theory) is useful.

### Course content

The goal of this course is to teach how to draw meaningful inference from financial data and develop the set of skills rich enough to write a successful Master thesis on a broad range of topics. The following is covered in detail:

- descriptive statistics of asset returns;
- linear models and asset pricing tests;
- correction of standard errors of estimated coefficients;
- robust and non-parametric estimation;
- time-series models;
- estimation and forecasting of volatility;
- event studies;
- pitfalls in econometric analysis.

Lectures are accompanied by PC lab sessions where students apply the gathered knowledge to real-world financial data, test dependencies between assets, come up with better volatility forecasts, design an event study and learn how to not get fooled by financial data.

### Course structure

1. Review of Statistics

sample mean, standard error, confidence interval, covariance, correlation

2. Least Squares

R-squared, t-statistics, outliers, hypothesis testing, autocorrelation and heteroskedasticity of residuals

3. CAPM and Linear Factor Models

CAPM, alpha, joint test of significance, multifactor model, mean-variance

5. Time Series Analysis

white noise, autoregression, moving average, forecasting

6. Non-parametric Estimation

kernel regression

7. Maximum Likelihood

loss function, quasi-MLE

8. Models of Autoregressive Volatility

ARCH, GARCH, GARCH variants, value-at-risk, expected shortfall

9. Univariate distributions

quantile, tails, skewness, normality test

8. Event Studies

normal return, abnormal return, CAR, structural breaks

## Course literature

*Required:*

Lecture notes (distributed in class);

*Optional #1 (theory of finance):*

Elton, E. J., M. J. Gruber, S. J. Brown, and W. N. Goetzmann, Modern Portfolio Theory and Investment Analysis

*Optional #2 (econometrics):*

M. Verbeek, A Guide to Modern Econometrics;

William H. Greene, Econometric Analysis;

## Additional course information

Language: English

# Examination information

## Examination sub part/s

### 1. Examination sub part (1/2)

**Examination time and form**
Decentral - Group examination paper (all given the same grades) (50%)

**Remark**
Problem sets (empirical)

**Examination-aid rule**
Term papers

- Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship.
- The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the APA or MLA standards. The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into the text in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C. (2015), Lern- und Arbeitsstrategien (11th ed., 4th printing). Aarau: Sauerländer).
- For any work written at the HSG, the indication of the page numbers both according to the MLA and the APA standard is never optional.
- Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.
- For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B. (2014, Juristisches Arbeiten: Eine Anleitung für Studierende (5. Auflage), Zürich: Schulthess, or the recommendations of the Law School).

**Supplementary aids**
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**Examination languages**
Question language: English
Answer language: English

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### 2. Examination sub part (2/2)

**Examination time and form**
Decentral - Written examination (50%, 60 mins.)

**Remark**
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**Examination-aid rule**
Open Book
Students are free to choose aids but will have to comply with the following restrictions:

- At such examinations, all the pocket calculators of the Texas Instruments **TI-30 series** are admissible. Any other pocket

calculator models are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as electronic dictionaries, notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

## Supplementary aids
Lecture notes are sufficient.

## Examination languages
Question language: English
Answer language: English

## Examination content
All topics covered by the Lecture notes except for optional ones (marked with an asterisk) AND during the PC lab sessions (listed on session printouts).

## Examination relevant literature
Lecture notes

## Please note
We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc.

When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 25 January 2018
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 19 March 2018
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 09 April 2018

Please look at the fact sheet once more after these deadlines have expired.