University of St.Gallen

Course and Examination Fact Sheet: Spring Semester 2021

8,154: Financial Econometrics

ECTS credits: 4

Overview examination/s

(binding regulations see below)
Decentral - Group examination paper (all given the same grades) (50%)
Examination time: term time
Decentral - Written examination (50%, 60 mins.)
Examination time: term time

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.

Learning objectives

Students are able to draw meaningful inference from financial data, based on a set of skills rich enough to write a successful Master thesis on a broad range of topics.

Course content

The following is covered in detail:

- descriptive statistics of asset returns;
- linear models estimation and testing;
- robust regressions;
- time-series models;
- estimating and forecasting volatility;
- event studies;
- panel regressions.

Lectures are accompanied by PC lab sessions using the R programming language, where students apply the gathered knowledge to real-world financial data, test dependencies between assets, come up with better forecasts, 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

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

4. Time Series Analysis

white noise, autoregression, moving average, forecasting

5. Maximum Likelihood

loss function, quasi-MLE

6. Models of Autoregressive Volatility

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

7. Univariate distributions

quantile, tails, skewness, normality test

8. Event Studies

normal return, abnormal return, CAR, structural breaks

9. Panel Data

fixed effects model, random effects model

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

This course will take place in hybrid form with pre-recorded lectures and face-to-face teaching. Attendance of the face-to-face teaching sessions is not mandatory.

In the case of the President's Board having to implement new directives due to the SARS-CoV-2 pandemic in SpS2021, the course information listed above will be changed as follows:

- The course is conducted online via the platform Zoom.
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- The recordings of the course are available until the exam;
- The lecturer informs via StudyNet and e-mail on the changed implementation modalities of the course;

  The examination information listed below would be changed as follows:

- The written examination is conducted online and is being recorded;

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%)
Examination time: term time

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 which is a published template in StudentWeb.

The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the chosen citation standard such as APA or MLA.

For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende, newest edition respectively, or according to the recommendations of the Law School).

The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into texts 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., Lern- und Arbeitsstrategien, newest edition respectively.

For any work written at the HSG, the indication of the page numbers is mandatory independent of the chosen citation standard. 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.

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.)
Examination time: term time

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:

- All the pocket calculators that are not of the Texas Instruments TI-30 series are explicitly 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, 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.

Examination relevant literature
Lecture notes

Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are is binding and takes precedence over other information, such as information on StudyNet (Canvas), on lecturers' websites and information in lectures etc.

Any references and links to third-party content within the fact sheet are only of a supplementary, informative nature and lie outside the area of responsibility of the University of St.Gallen.

Documents and materials are only relevant for central examinations if they are available by the end of the lecture period (CW21) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 12 are relevant for testing.

Binding nature of the fact sheets:

- Course information as well as examination date (organised centrally/decentrally) and form of examination: from bidding start in CW 04 (Thursday, 28 January 2021);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 22 March 2021);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 12 (Monday, 22 March 2021);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 14 (Thursday, 8 April 2021).