QUANTITATIVE METHODS IN FINANCIAL MARKET

1. MODULE SUMMARY

Aims and Summary

High-frequency data analysis is one of the most important skills that can be needed in the practical application of knowledge acquired during the studies of financial markets (also important from the theoretical ground - Nobel prize for methods of analyzing economic time series with time-varying volatility won by R. F. Engle).

The module has strictly applicative and easy-to-understand focus.

Emphasis is placed upon practically relevant aspects of the subject, mainly: creating ARCH models to analyze stock market data, interpreting models parameters and constructing investment strategy simulation based on the results.

This course aims are to deliver easy-to-understand and easy-to-application ways of analyzing financial markets (stock market particularly). Providing an understanding of Quantitative Methods as a primary tool in modern research and a variety of jobs especially in the financial sector is one of the goals of the course. Fluent use of MS Excel spreadsheet and EViews in financial modeling can be valuable resource in future academic or in any sector where data analysis is used (financial sector, banking, marketing, management, IT, etc.), therefore learning outcomes include: acquiring mostly applicative but also theoretical knowledge of financial market analyzes (stock market), developing skills of investing strategy building process, developing IT skills in case of MS Excel Spreadsheets and econometric software (Eviews), understanding theories and role of stock market efficiency and process of exploiting potential market inefficiencies.

Module Size and credits

ECTS points	5
Total student study hours	125
Number of weeks	12
School responsible	Lazarski University, Faculty of Economics and Management
Academic Year	2022/2023

Entry Requirements (pre-requisites and co-requisites)
Basics of Economic Modelling, Research Methods
Excluded Combinations

None

Composition of module mark (including weighting of components)

Coursework, 100% (project report)

Pass requirements

To pass the course a student must score at least 40% of the overall weighted average and not less than 35% for each assessment component (i.e. coursework and final exam). Re-assessment: coursework component and/or examination as appropriate.

Special Features

None

Course stages for which this module is mandatory

None

Course stages for which this module is a core option

MSc in International Business Economics , Year 2

2. TEACHING, LEARNING AND ASSESSMENT

Intended Module Learning Outcomes

On completion of this module a student should be able to:

1. Know how to define and explain relationship between different stock markets in context of "meteor shower effect". Students characterize rules of opening (long and short) and closing positions on stock market, choose, evaluate and analyse optimal investment strategy and explain reasons of heteroskedasticity and role it plays in econometric model estimations,

2. Use quantitative methods in practical analysis of stock markets,

3. Fluently organize and undertake econometric modelling of investment process,

4. Will be trained to use spreadsheet in order to simulate investment process/strategy, to undertake computation and interpretation of direction quality measures of econometric model used in investment process.

   Indicative Content

1. Introduction to ARCH models – theoretical background, need of use ARCH models in financial models with heteroscedasticity problem.

2. Efficiency of stock markets.

3. „Meteor shower effect" and „Heat waves effect" on stock markets.

4. Direction quality measures. Basic of simulation of the strategy. Strategy assumptions and conditions.

5. Data quality and its role in building of financial econometric models. Developing ARCH models.

6. Development of simulation of the strategy.

7. Introducing tools for improving practicability of the strategy (filters, introducing transaction costs).

8. Spreadsheets based work and further development of the strategy.

9. Influence of assumptions.

10. Calculation of break-even-point in the context of transaction costs.

11. Developing the complexity of the strategy – introducing portfolios of indexes to the "Meteor shower effect".

12. Developing the complexity of the strategy – introducing improvements developed by students during classes (or others like stop-loss/take-profit orders) of indexes to the "Meteor shower effect".

13. Measures of strategy efficiency.

14. Financial modeling and its challenges in the context of econometric theory development and practical application of it.

Teaching and Learning
This module will be taught by means of workshops in the computer lab (100%).
Formative Assessment: Comments will be given on assessments, and tutorial guidance will be provided for coursework and exam. Student activity and time spent on each activity comprises:

Guided	0 hours	(0%)
Lecture	30 hours	(24%)
Self-guided	95 hours	(76%)
Seminar	0 hours	(0%)
Workshop	0 hours	(0%)

Total	125 hours

Method of Assessment (normally assessed as follows)

The intended learning outcomes will be assessed as follows:

Coursework, 100%, consisting of a project report (1500-2500 words), will assess learning outcomes 1-4

Date of last amendment

15.07.2015

3. MODULE RESOURCES

Required Reading

Gujarati D. N. (2004), „Basic Econometrics", The McGraw−Hill Companies

Recommended Reading

Campbell J.Y, Lo A.W., MacKinlay A.C. (1997) „The Econometrics of Financial Markets", Princeton University Press

Winston W.L. (2014), "Microsoft Excel 2013 Data Analysis and Business Modeling" Microsoft Press **Required**

Equipment None.

4. MODULE ORGANISATION

Module leader

Name	Dr Tomasz Schabek
E-mail	schabek.tomasz@gmail.com

Length and month of examination

None

Expected teaching timetable slots

No timetable information available