

IB93F-15 Data Analysis for Finance

26/27

Department

Warwick Business School

Level

Taught Postgraduate Level

Module leader

Philippe Mueller

Credit value

15

Module duration

30 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

The module aims to equip students with the necessary tools to conduct independent empirical research in finance. This includes a) an in-depth look at the relevant research methodologies in empirical finance, b) training in programming and quantitative analysis and c) introduction to various data sources available at or through WBS.

[Module web page](#)

Module aims

In terms of content, the module aims to introduce or reinforce empirical methodologies that are frequently employed for selected topics in empirical finance (both asset pricing as well as corporate finance) that may very well be covered in concurrent modules. Thus, while there might be some overlap with other modules, the distinguishing feature of this module is the focus on data collection and cleaning, as well as the implementation of quantitative models using various software packages.

Training in programming and introduction to data handling will be delivered from the very beginning of the course, to ensure that students have the required skills when they are needed for workshops and assignments in the core modules.

The module runs over all three terms. 20 hours of programming skill sessions will be delivered in Terms 1 and 2. In addition, 10 hours of lectures are delivered over all three terms. In Terms 1 and 2, the lectures cover different topics in Finance to motivate and underpin the programming skills session. In Term 3, the students need to choose two specialist sessions that cover methods commonly used in students' dissertation subject areas, or relevant to the internship project.

The module will assess programming skills through one individual assessment and an empirical project in the chosen subject area.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module contains two main parts. First, we focus on basic data collection and computer programming skills, including:

- Logic of programming
- Use of matrices, arrays, data types, structures and manipulation.
- Good programming practice.
- Algorithmic principles in applied research.
- Simple numerical methods for finance.
- Data storage and retrieval.

In order to deliver the basic insights to programming, we cover the following topics to illustrate applications:

- Statistical properties of asset prices.
- Volatility modelling and forecasting in finance.
- Risk measures and risk measurement using statistical methods.

Later in the module, the focus shifts on applications relevant for research. The topics include empirical methods used in the fields of asset pricing as well as corporate finance such as:

- Asset pricing: Tests of asset pricing models, Fama-Macbeth regressions, constructing and optimizing portfolios.
- Corporate finance: Instrumental variables, quasi-experimental methods, diff-in-diff methods and event studies.

Prerequisites:

- Basic knowledge of statistics and mathematics is essential.
- However, no prior programming experience is necessary.
- Students need to ensure they have access to WRDS via WBS.

Learning outcomes

By the end of the module, students should be able to:

- Demonstrate an in-depth comprehension of the current literature in the topic area, including the boundaries of current knowledge and where these may be extended.

- Understand the limitations of knowledge and current technologies in their chosen area.
- Critically review relevant literature leading to the formation of testable hypotheses.
- Synthesise and apply research methods and tools to real and practical examples.
- Develop, apply and interpret the outcome of appropriate tests of the hypotheses.
- Fully appreciate and thoroughly explain the limitations of the research project; be realistic in what conclusions can safely be drawn because of the research carried out.
- Understand the logic of programming, use of matrices, arrays, and data manipulation, including good programming practices.
- Apply computer programming techniques to process financial and accounting databases and perform statistical tests.

Indicative reading list

[Reading lists can be found in Talis](#)

Research element

The title implies a research element - the final project is a simplified research project.

International

Data used in the project can be international.

Subject specific skills

Recognise, critically analyse and discuss the merits of various approaches to finance, accounting and management research.

Understand the logic of programming, use of matrices, arrays, and data manipulation, including good programming practices.

Apply computer programming techniques to process financial and accounting databases and perform statistical tests.

Transferable skills

Use university/library resources to generate information/datasets for use in the project.

Study

Study time

Type	Required
Other activity	30 hours (20%)
Total	150 hours

Type	Required
Private study	48 hours (32%)
Assessment	72 hours (48%)
Total	150 hours

Private study description

Private study to include preparation for lectures and practical classes/workshops

Other activity description

Standard lectures 5x1 hr (one or two of those may be delivered as asynchronous pre-recorded content).

Specialist sessions 2x2.5 hrs

Practical class/ workshops 10 x 2 hrs

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A4

	Weighting	Study time	Eligible for self-certification
Assessment component			
Empirical Research Project	70%	50 hours	Yes (extension)
Empirical research project (1500 words)			

Reassessment component is the same

Assessment component			
Programming skills assignment	30%	22 hours	Yes (extension)
Programming skills assignment (no word count as coding task)			

Weighting Study time Eligible for self-certification

Reassessment component is the same

Feedback on assessment

Feedback via my.wbs

Availability

Courses

This module is Core for:

- Year 1 of TIBS-N300 MSc in Finance
- Year 1 of TIBS-LN1J Postgraduate Taught Finance and Economics