

# IB2B2-15 Financial Econometrics

**24/25**

**Department**

Warwick Business School

**Level**

Undergraduate Level 2

**Module leader**

Anthony Garratt

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

This module aims at providing a solid training in econometric methods for the empirical analysis of financial markets. The core of the module is an undergraduate-level introduction to financial econometrics, and it is meant to equip the student with the quantitative skills needed for carrying on research projects in empirical finance.

A key part of the module is the use of the program MATLAB, which will be used to perform empirical analysis, the project and to aid learning and understanding of the techniques taught. It is also an introduction to using programs more generally.

The use of MATLAB can be a little daunting in the first instance and has a steep learning curve. However, its use has many benefits - as a method of learning and acquiring some transferable basic programming skills. Throughout the course, we will use it as simply as possible, performing basic tasks. NOTE: MATLAB will NOT be examined in the in person exam (70% of overall mark), BUT is required to be used for the group project (20% of overall mark).

The second challenging aspect of the course that students have found difficult is the use of matrix algebra when describing the linear regression model (with more than one variable). I appreciate it is difficult, but would like to emphasise that most of the course does not require explicit use of it, and once we have established some properties/formula then we can proceed. This material will be examinable in the summer exam (not the group project)

The module is challenging, requiring significant effort and application, but the skills acquired are necessary for data analysis and for appreciating the value of rigorous empirical evidence, and as such, they are useful when considering future careers. They are also intellectually rewarding.

[Module web page](#)

## **Module aims**

The module aims to provide a solid grounding in the principles and techniques of modern financial econometrics. In doing so, it will serve as an introduction to key econometric and statistical methods of empirical investigation in Finance and Financial Economics.

The module aims to equip students with the following competencies, in particular:

1. Establish the specific characteristics of a financial dataset.
2. Undertake empirical analysis of financial-markets data.
3. Understand the features of univariate time-series modelling.
4. Use of econometric software packages as tools for quantitative and statistical analysis.

Teaching will be via lectures and seminars, where the seminars go through problems and questions related to the lecture material and show practical applications of the concepts and techniques introduced in lectures.

To illustrate concepts the chosen software for the course is sometimes used.

## **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 linear regression model – single and multiple variable (cross-sectional), using some basic matrix algebra

Hypothesis testing, dummy variables, heteroskedasticity

Regression analysis with Time Series Data

Trends, Non-stationarity, Unit roots, Cointegration

Forecasting using ARIMA models

Panel data estimation: fixed effects/first differences

## **Learning outcomes**

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

- Explain the theoretical principles underpinning a suite of introductory econometrics and statistical tools.
- Select the most appropriate model specification and econometric setup to answer a research question in empirical Finance.

- Assess the robustness and power of a suite of statistical and econometric techniques for analysing financial data.

## Indicative reading list

Brooks C (4th edition, 2019) Introductory Econometrics for Finance, Cambridge University Press (2nd and 3rd editions are also applicable)

Campbell J, Lo A and MacKinlay A (1997): The Econometrics of Financial Markets, Princeton University Press

Christoffersen, P (2nd edition, 2012) Elements of Financial Risk Management, Elsevier, Academic Press

Wooldridge, (6th edition, 2016) Introductory Econometrics: A Modern Approach, Cengage

## Subject specific skills

Upon successful completion of the module, students will be able to:

- carry out robust empirical analysis of cross-sectional, time-series and panel data in Finance.
- critically evaluate and replicate aspects of published empirical finance studies.

## Transferable skills

Upon successful completion of the module, students will be able to:

- design and undertake small inquiry-based projects in empirical finance.
- critically evaluate a range of econometric techniques for analysing financial data.

## Study

### Study time

Type	Required
Lectures	10 sessions of 1 hour (7%)
Seminars	9 sessions of 1 hour (6%)
Online learning (independent)	10 sessions of 1 hour (7%)
Private study	48 hours (32%)
Assessment	73 hours (49%)
Total	150 hours

### Private study description

No private study requirements defined for this module.

## Costs

No further costs have been identified for this module.

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## Assessment

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

### Assessment group D3

	Weighting	Study time
Group Report	20%	14 hours
Participation	10%	8 hours
Participation/attendance at seminars and lectures and activities via my.wbs.		
In-person Examination Exam	70%	51 hours

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- Answerbook Gold (24 page)
- Students may use a calculator

### Assessment group R3

	Weighting	Study time
Individual Assignment	30%	
In-person Examination - Resit Exam	70%	

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- Answerbook Gold (24 page)

## Feedback on assessment

In-class and on my.wbs

[Past exam papers for IB2B2](#)

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## Availability

## Pre-requisites

To take this module, you must have passed:

- All of
  - [IB122-15 Business Analytics](#)

There is currently no information about the courses for which this module is core or optional.