AFIN7090

Financial Modelling and Forecasting

Session 1, In person-scheduled-intensive, North Ryde 2024

Department of Applied Finance

Contents

General Information

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Credit points 10
Prerequisites Admission to MRes
Corequisites
Co-badged status AFIN8090
Unit description This unit applies financial modelling and forecasting principles to various methods and theories covered in the corporate finance and financial statement analysis fields. This is an excellent course for students with an interest in a career in corporate finance or financial statement analysis. The modelling and forecasting principles covered in this course are not simply an application of extrapolative techniques to historical data. Rather, there is an emphasis on modelling the uncertainty, and alerting decision makers, of corporate change as the forecast horizon increases. This is very much a hands-on course and the lectures use worked examples throughout, requiring students to be at computer terminals with access to excel and industry standard simulation packages. The worked examples are designed to reinforce the financial modelling and forecasting principles covered in the course.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

> **ULO1:** Evaluate and summarise with appropriate statistics the empirical properties of financial time series data.
>
> **ULO2:** Build and estimate a range of quantitative, statistical models used by financial analysts and forecasters using software tools.
>
> **ULO3:** Critically examine some of the core financial modelling and time series

forecasting methods used in financial risk and return modelling research.

ULO4: Model uncertainty in the financial markets to include these effects in their analysis.

General Assessment Information

Late Assessment Submission Penalty (written assessments)

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55 pm. A 1-hour grace period is provided to students who experience a technical concern.

Students must submit an application for Special Consideration for late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs.

Assessment Tasks

Name	Weighting	Hurdle	Due
Modelling Task 1	45%	No	Week 7
Modelling Task 2	55%	No	Week 13

Modelling Task 1

Assessment Type [1]: Modelling task
Indicative Time on Task [2]: 30 hours
Due: **Week 7**
Weighting: **45%**

The assignment requires students to employ selected financial modelling techniques discussed in the class lectures to analyse real world data. The task involves using Excel and R software to generate financial analytics for Financial Portfolio Modelling and Financial Risk Modelling.

On successful completion you will be able to:

- Evaluate and summarise with appropriate statistics the empirical properties of financial time series data.
- Build and estimate a range of quantitative, statistical models used by financial analysts and forecasters using software tools.

- Critically examine some of the core financial modelling and time series forecasting methods used in financial risk and return modelling research.
- Model uncertainty in the financial markets to include these effects in their analysis.

Modelling Task 2

Assessment Type [1]: Modelling task
Indicative Time on Task [2]: 35 hours
Due: **Week 13**
Weighting: **55%**

The assignment requires students to employ selected financial risk forecasting techniques discussed in the class lectures to analyse real world data. The task involves using R software and econometrics methods to quantify financial risk for individual assets and portfolios. The analysis will need to be discussed and presented in a document. An oral presentation may also be required.

On successful completion you will be able to:

- Evaluate and summarise with appropriate statistics the empirical properties of financial time series data.
- Build and estimate a range of quantitative, statistical models used by financial analysts and forecasters using software tools.
- Critically examine some of the core financial modelling and time series forecasting methods used in financial risk and return modelling research.
- Model uncertainty in the financial markets to include these effects in their analysis.

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Required Text:	The unit will utilise various library resources, including research papers, book chapters, case studies etc., and relevant material will be made available on ilearn.

Unit Web Page:	Log in via https:iLearn
Technology Used and Required:	**Necessary technology**: Computer with MS Excel, R and RStudio software, scientific or business calculator without alphanumeric capabilities, internet access. Useful technology: The MATLAB and Python software environment are also very useful if you intend doing this sort of work professionally.
Delivery Format and Other Details:	**Teaching and Learning Activities** The teaching in the unit will be interactive case study style delivery where financial modelling and forecasting methods will be discussed along with hands on examples using Excel and R. You are strongly advised to attempt all examples before the weekly lectures, and before consulting the solutions. You are encouraged to submit your workings of the class examples for further feedback.
Recommended Readings:	We will supplement the lecture materials with readings from journals and other textbooks. A list of relevant material will be provided on iLearn site. Following are some of the recommended readings: • Rees, M. (2015). Building Blocks: Selected Excel Functions and Tools. In Financial Modelling in Practice (pp. 1-48). Hoboken, NJ, USA: John Wiley & Sons. • Fairhurst, D. (2015). Using Excel in Financial Modelling. In Using Excel for Business Analysis (pp. 71-92). Hoboken, NJ, USA: John Wiley & Sons. • Pfaff, B. (2013). *Financial Risk Modelling and Portfolio Optimization with R*. New York: John Wiley & Sons, Incorporated. • Hands-On Programming with R (1st ed.). (2014). O'Reilly Media.Also available at https://rstudio-education.github.io/hopr/index.html • Ha?rdle, Wolfgang, Chen, Cathy Yi - Hsuan, Overbeck, Ludger, & Springer - Verlag Gmbh. (2017). *Applied quantitative finance* (Statistics and computing). Berlin, Germany: Springer. • Choe, G., & Springer International Publishing Ag. (2016). *Stochastic analysis for finance with simulations* (Universitext). • Singh, A., & Allen, David E. (2017). R in finance and economics : A beginner's guide / Abhay Kumar Singh, David Edmund Allen.

Unit Schedule

Please refer to ilearn

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

• Academic Appeals Policy

• Academic Integrity Policy

• Academic Progression Policy

• Assessment Policy

• Fitness to Practice Procedure

• Assessment Procedure

- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Unit information based on version 2024.02 of the Handbook