



AFIN890

Financial Modelling and Forecasting

S2 Day 2019

Department of Applied Finance

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	6
<u>Policies and Procedures</u>	7
<u>Graduate Capabilities</u>	9

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General Information

Unit convenor and teaching staff

Unit Convenor & Lecturer

Abhay Singh

abhay.singh@mq.edu.au

E4A 517

Refer to iLearn

Credit points

4

Prerequisites

ACST603 or AFIN858 or (4cp in ACCG or ACST or BUS or MKTG units at 600 level)

Corequisites

Co-badged status

Unit description

This unit applies financial modelling and forecasting principles to various methods and theories covered in the financial risk and return modelling, securities and market analysis and financial forecasting fields. This is an excellent unit for students with an interest in a career in financial risk and return analytics and applied financial econometrics, and combines well with the other Masters units in those fields. 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 consequences as the forecast horizon increases and the risk level changes. Financial Modelling and Forecasting is very much a hands-on course, with the seminars conducted in the computer laboratories emphasising upon empirical work and applied analysis of real market data. The Lectures use worked examples throughout, requiring students to be at computer terminals with access to Excel, R and industry standard financial databases. The worked examples are designed to reinforce the financial modelling and forecasting principles covered in the unit.

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:

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.

Apply both traditional and modern time series methods in forecasting financial risk and return using software tools.

Present a complex model in simple and credible terms, understandable by decision makers.

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

General Assessment Information

- It is the responsibility of students to view their marks for each within session assessment on iLearn within 20 working days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment marks (not including the final exam mark) will not be addressed.
- Assessment criteria for all assessment tasks will be provided on the unit iLearn site.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Early Diagnostic Online Quiz</u>	5%	No	Week-4
<u>Assignment</u>	35%	No	Week-7, Friday 13 September 2019
<u>Final Exam</u>	60%	No	During examination period

Early Diagnostic Online Quiz

Due: **Week-4**

Weighting: **5%**

Task Description:

The online quiz will consist of 10 to 15 multiple choice questions and will be available on iLearn in week 4. It will remain open for 48 hours and will only allow one attempt. It will be based on material covered in the first 4 weeks. Please use this online quiz as an indicator of whether you are progressing satisfactorily in the unit. If you are having difficulties, please see the unit convenor or consider withdrawing from the subject before the census date.

Type of Collaboration:

Individual

Submission:

via iLearn

Format:

Online Multiple Choice

Length:

Refer to iLearn

Inherent Task Requirements:

Refer to iLearn

Late Submission:

No extensions will be granted. Students who have not submitted the task prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Evaluate and summarise with appropriate statistics the empirical properties of financial time series data.

Assignment

Due: **Week-7, Friday 13 September 2019**

Weighting: **35%**

Task Description:

The assignment will be based on first 6 weeks of the unit. **An assignment document with further details along with a marking guide will be uploaded on the ilearn site.**

Type of Collaboration:

Individual

Submission:

Refer to iLearn

Format:

Refer to iLearn

Length:

Refer to iLearn

Inherent Task Requirements:

Refer to iLearn

Late Submission:

No extensions will be granted. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission – 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved. No submission will be accepted after solutions have been posted.

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.
- Apply both traditional and modern time series methods in forecasting financial risk and return using software tools.
- Present a complex model in simple and credible terms, understandable by decision makers.
- Model uncertainty in the financial markets to include these effects in their analysis.

Final Exam

Due: **During examination period**

Weighting: **60%**

Task Description:

The final exam will be based on topics covered during week-6 to week-13

Type of Collaboration:

Individual

Submission:

During examination period

Format:

Refer to iLearn

Length:

Refer to iLearn

Inherent Task Requirements:

Refer to iLearn

Late Submission:

No extensions will be granted. Students who have not submitted the task prior to the deadline

will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Build and estimate a range of quantitative, statistical models used by financial analysts and forecasters using software tools.
- Apply both traditional and modern time series methods in forecasting financial risk and return using software tools.
- Present a complex model in simple and credible terms, understandable by decision makers.
- Model uncertainty in the financial markets to include these effects in their analysis.

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.mq.edu.au
Technology Used and Required:	<p>Necessary technology: Computer with MS Excel, R and RStudio software, scientific or business calculator without alphanumeric capabilities, internet access.</p> <p>Useful technology: The MATLAB and Python software environment is very useful if you intend doing this sort of work professionally.</p>
Delivery Format and Other Details:	<p>Classes</p> <p>Classes are 3-hour seminars and timetable can be found at https://timetables.mq.edu.au/2019/. A typical class will be structured as around 2-hour lecture and 1-hour hands on example. The two parts will mostly flow together and not separately. Please feel free to ask (and answer!) questions throughout the class. Attendance at classes is expected.</p> <p>Teaching and Learning Activities</p> <p>The three hours 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.</p> <p>You are strongly advised to attempt all examples before the weekly seminar, and before consulting the solutions.</p> <p>You are encouraged to submit your workings of the class examples for further feedback.</p>

Recommended Readings:	<p>We will supplement the lecture materials with readings from journals and other textbooks. A list of relevant material will be provided on iLearn site.</p> <p>Following are some of the recommended readings:</p> <ul style="list-style-type: none">• 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). <i>Financial Risk Modelling and Portfolio Optimization with R</i>. 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• Harßler, Wolfgang, Chen, Cathy Yi - Hsuan, Overbeck, Ludger, & Springer - Verlag GmbH. (2017). <i>Applied quantitative finance</i> (Statistics and computing). Berlin, Germany: Springer.• Choe, G., & Springer International Publishing Ag. (2016). <i>Stochastic analysis for finance with simulations</i> (Universitext).• Singh, A., & Allen, David E. (2017). <i>R in finance and economics : A beginner's guide</i> / Abhay Kumar Singh, David Edmund Allen.
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Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

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

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/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

Supplementary Exams

Further information regarding supplementary exams, including dates, is available here

http://www.businessandconomics.mq.edu.au/current_students/undergraduate/how_do_i/special_consideration

Student Support

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

Learning Skills

Learning Skills (<mq.edu.au/learningskills>) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at <ask.mq.edu.au>

If you are a Global MBA student contact globalmba.support@mq.edu.au

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.

Graduate Capabilities

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- 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.
- Apply both traditional and modern time series methods in forecasting financial risk and return using software tools.
- Present a complex model in simple and credible terms, understandable by decision makers.
- Model uncertainty in the financial markets to include these effects in their analysis.

Assessment tasks

- Early Diagnostic Online Quiz
- Assignment
- Final Exam

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- 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.

- Apply both traditional and modern time series methods in forecasting financial risk and return using software tools.
- Present a complex model in simple and credible terms, understandable by decision makers.
- Model uncertainty in the financial markets to include these effects in their analysis.

Assessment tasks

- Early Diagnostic Online Quiz
- Assignment
- Final Exam

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- Evaluate and summarise with appropriate statistics the empirical properties of financial time series data.
- Present a complex model in simple and credible terms, understandable by decision makers.

Assessment task

- Assignment