AFIN329

Security Pricing and Hedging

S1 Day 2014

Applied Finance and Actuarial Studies

Contents

Disclaimer

General Information

Unit convenor and teaching staff
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Refer to iLearn
Refer to iLearn

Credit points
3

Prerequisites
6cp at 200 level including (ACCG252 or AFIN252)

Corequisites

Co-badged status

Unit description
This unit explores the principles, theory and techniques of asset pricing. The first half of the unit focuses on portfolio analysis and multifactor models applicable to problems in investment analysis and asset allocation. The second half of the unit focuses on pricing techniques driven by arbitrage arguments. Arbitrage or relative pricing arguments underpin powerful, robust methods for pricing derivative securities. Upon successful completion of this unit students will: understand the economic arguments underlying important asset pricing models; be able to apply the models to practical problems; and have developed an awareness of the need to consider the limitations of models and techniques when applied to non-textbook examples. The unit aims to develop graduate capabilities in critical, analytical and integrative thinking, problem solving and research.

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:

Understand the concepts of option pricing theory and the role of derivatives.

Be able to understand financial derivatives such as forward/futures and options.

Develop skills to price options and its role as finance professionals.

Understand the principle of hedging, arbitrage theory and structured products.

Assessment Tasks

Name	Weighting	Due
Class Participation	5%	Lecture Weeks 2-13
Class Test	20%	Week 7
Assignment	15%	Submission Weeks 10
Final Examination	60%	University Examination Period

Class Participation

Due: **Lecture Weeks 2-13**
Weighting: **5%**

Each week you will be marked on your attendance to your assigned tutorial group as well as participation in problem solving activities as well as an oral component where you will be asked to critically analyze and discuss a tutorial question.

Penalties

Absence from tutorials 2 or more times will result in mark deductions.

What is required to complete the unit satisfactorily

Regular attendance to tutorials and participation in problem solving activities and class discussions as well as completion of homework assignments by the due date.

On successful completion you will be able to:

- Understand the concepts of option pricing theory and the role of derivatives.
- Be able to understand financial derivatives such as forward/futures and options.

- Develop skills to price options and its role as finance professionals.
- Understand the principle of hedging, arbitrage theory and structured products.

Class Test

Due: **Week 7**
Weighting: **20%**

Submission

The Class Test is scheduled to be held during regular lecture day and time in Week 7 (week commencing 28 April). Refer to iLearn for further details (exam venues will be posted closer to the class test date).

Total time available for the class test is 90 minutes. The class test is based on topics covered during lectures 1 to 6, inclusive. No dictionaries of any kind are allowed in the class test. Non-programmable calculators are allowed, provided that they are not capable of storing text.

Extension

No extensions will be granted. Students who do not sit the test will be awarded a mark of 0, except for cases in which an application for special consideration is made and approved.

Penalties

Students who have not completed this exam will be awarded a mark of zero for this task, except for cases in which an application for special consideration is made and approved. If approval is granted then you have to complete a supplementary class test during week 9 commencing (12 May).

What is required to complete the unit satisfactorily

The class test is based on topics covered during lectures and tutorials from Week 1 to 6, inclusive.

On successful completion you will be able to:

- Understand the concepts of option pricing theory and the role of derivatives.
- Be able to understand financial derivatives such as forward/futures and options.
- Understand the principle of hedging, arbitrage theory and structured products.

Assignment

Due: **Submission Weeks 10**
Weighting: **15%**

The assignment question will be posted on iLearn in Lecture Week 2. Students will be required to carry out research as a group (5 students) to meet the requirements of the assignment.

Submission

The assignment must be submitted by each group in type written format (one for each group. No electronic submissions allowed) to your tutor during the tutorial of Lecture Week 10.

Extension

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 cases in which an application for special consideration is made and approved.

Penalties

Students who have not completed the task prior to the deadline will be awarded a failing grade (i.e. a mark of zero) for the task. No special consideration will be granted.

What is required to complete the unit satisfactorily

Students will be allocated into groups of 5 members by their tutors.

The requirement is to submit the type written report (hard copy, total of 15% marks for satisfactory content) to the tutor on time.

On successful completion you will be able to:
- Understand the concepts of option pricing theory and the role of derivatives.
- Develop skills to price options and its role as finance professionals.

Final Examination

Due: **University Examination Period**
Weighting: **60%**

Examination conditions

The **final exam** is based on topics covered during lecture weeks 1 to 13, inclusive. Total time available for the final examination is 3 hours plus 10 minutes reading time. No dictionaries of any kind are allowed in the final examination. Non–programmable calculators are allowed, provided that they are not capable of storing text.

The University Examination period commences on 16 June 2014. You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations. http://www.timetables.mq.edu.au/exam

The only exception to not sitting an examination at the designated time is because of

documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. The University's policy on special consideration process is available at http://www.mq.edu.au/policy/docs/special_consideration/policy.html

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. (Individual Faculties may wish to signal when the Faculties' Supplementary Exams are normally scheduled.) The Macquarie university examination policy details the principles and conduct of examinations at the University. The policy is available at:http://www.mq.edu.au/policy/docs/examination/policy.html

What is required to complete the unit satisfactorily

Students **must** obtain a pass mark for the final examination and an overall pass mark in order to attain a Pass grade or higher for the unit.

On successful completion you will be able to:

- Understand the concepts of option pricing theory and the role of derivatives.

- Be able to understand financial derivatives such as forward/futures and options.

- Understand the principle of hedging, arbitrage theory and structured products.

Delivery and Resources

Delivery and Resources

Classes

- The weekly three hour class for this unit consists of a two hour lecture and a one hour tutorial.

- The timetable for classes can be found on the University web site at:
  https://timetables.mq.edu.au/

Prizes

Prizes for this unit (see).

http://www.buisnessandeconomics.mq.edu.au/undergraduate_degrees/prizes_scholarships

Required and Recommended Texts and/or Materials

- For the first two weeks of the unit, the required textbook is E.J. Elton, M.J. Gruber, S.J. Brown and W.N. Goetzmann, Modern Portfolio Theory and Investment Analysis, J. Wiley & Sons (8th Edition) 2009, however relevant resources and chapters will be provided to you (**no** hardcopy is required to purchase)

- The required textbook is 'Fundamentals of Futures and Options Markets', John C. Hull, Sirimon Treepongkaruna, Richard Heaney, David Pitt and David Colwell, Pearson, 2014

- This is available for purchase from the Macquarie University Co-op Bookshop, and a copy will be available in the closed reserve section of the Macquarie Livrary.

Technology Used and Required
Unit Web Page

- The web page for this unit can be found at http://ilearn.mq.edu.au
- It is the responsibility of students to visit the unit regularly. Course material is available on the learning management system (iLearn).
- Lecture notes, tutorial solutions, unit announcements, and other reference materials will be posed to this site throughout the semester.

Changes Since Last Offering (S2 2013)

- Class Participation (Tutorial attendance and participation) will be assessed this semester. The marks from this assessment will go towards your final grade (weighting 5%), now includes a communication component
- The Assignment, previously known as the Major Project, no longer includes a communication skills component
- Textbook has changed from preivous semesters
- Format of course has changed

Unit Schedule

Lecture Week	Lecture Topic
1 - (03 March)	Overview of Mean Variance Portfolio Theory
2 - (10 March)	Mean Variance Portfolio Theory and Techniques for Calculating the Efficient Frontier
3 - (17 March)	Introduction to Derivatives and Mechanics of Futures Market
4 - (24 March)	Hedging Strategies Using Futures and Determination of Forward and Futures Prices
5 - (31 March)	Swaps

6 - (07 April)	Mechanics of Option Markets and Properties of Stock Options
14 April - 25 April	**Mid-semester recess**
7 - (28th April)	***Class Test**
8 - (05 May)	Trading Strategies Involving Options
9 - (12 May)	Introduction to Binomial Trees
10 - (19 May)	Valuing Stock Options: The Black Scholes Model
11 - (26 May)	Options on Stock Indices and Currencies and Futures Options
12 - (02 June)	Greek Letters
13 - (09 June)	Revision

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central.
Students should be aware of the following policies in particular with regard to
Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy http://mq.edu.au/policy/docs/grading/policy.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and*

replaces the Special Consideration Policy.

In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/

Supplementary Exam

Further information regarding supplementary exams, including dates, is available here
http://www.businessandeconomics.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

IT Help

For help with University computer systems and technology, visit http://informatics.mq.edu.au/help/.

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

Graduate Capabilities

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Understand the concepts of option pricing theory and the role of derivatives.
- Be able to understand financial derivatives such as forward/futures and options.
- Develop skills to price options and its role as finance professionals.
- Understand the principle of hedging, arbitrage theory and structured products.

Assessment tasks

- Class Test
- Final Examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Understand the concepts of option pricing theory and the role of derivatives.
- Be able to understand financial derivatives such as forward/futures and options.
- Develop skills to price options and its role as finance professionals.
- Understand the principle of hedging, arbitrage theory and structured products.

Assessment tasks

- Class Participation
- Class Test
- Assignment

- Final Examination

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Understand the concepts of option pricing theory and the role of derivatives.
- Be able to understand financial derivatives such as forward/futures and options.

Assessment tasks

- Class Participation
- Class Test
- Assignment
- Final Examination

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- Understand the principle of hedging, arbitrage theory and structured products.

Assessment tasks

- Class Participation
- Assignment

Research and Practice

- This unit gives you practice in applying research findings in your assignments
- This unit gives you opportunities to conduct your own research

Weekly Curriculum and Homework Schedule

Readings: Lecture for Week 1

- Elton, Gruber, Brown & Goetzmann Chapter 4

Questions and Problems: 1, 2 & 3

Readings: Lecture for Week 2

- **Elton, Gruber, Brown & Goetzmann Chapters 5 & 6**

Questions and Problems: Ch. 5: 1, 4 Ch 6: 1, 2 Extension: Ch. 5: 5 & Ch. 6: 5

Readings: Lecture for Week 3

- Hull et al, Chapters 1 & 2

Questions and Problems: Ch. 1: 1.9, 1.12, 1.16. 1.20, 1.22, 1.32   Ch. 2: 2.8, 2.9, 2.25 & 2.28

Readings: Lecture for Week 4

- Hull et al, Chapters 3 & 5

Questions and Problems: Ch. 3: 3.9, 3.11, 3.12, 3.13, 3.14, 3.15 & 3.19   Ch. 5: 5.8, 5.13, 5.16, 5.20

Readings: Lecture for Week 5

- Hull et al, Chapter7

Questions and Problems: Ch. 7: 7.8, 7.9, 7.12, 7.15, 7.16, 7.17 & 7.22

Readings: Lecture for Week 6

- Hull et al, Chapters 9 &10

Questions and Problems: Ch. 9: 9.8, 9.9, 9.10, 9.13, 9.20 & 9.23   Ch. 10: 10.8, 10.9, 10.10, 10.14 & 10.23

Readings: Lecture for Week 8

- Hull et al, Chapter 11

Questions and Problems: Ch. 11: 11.8, 11.9, 11.12, 11.19 & 11.22

Readings: Lecture for Week 9

- Hull et al, Chapter 12

Questions and Problems: Ch. 12: 12.9, 12.10, 12.11, 12.12 & 12.13

Readings: Lecture for Week 10

- Hull et al, Chapters 13

Questions and Problems: Ch.13: 13.8, 13.9, 13.10 & 13.12

Readings: Lecture for Week 11

- Hull et al, Chapters 15 & 16

Questions and Problems: Ch. 15: 15.8, 15.9 & 15.10   Ch. 16: 16.8, 16.9, 16.11, 16.17, 16.18 & 16.19

Readings: Lecture for Week 12

- Hull et al, Chapter 17

Questions and Problems: Ch.17: 17.8, 17.9, 17.13, 17.18 & 17.21

Week 13: Revision