



ACCG329 SECURITY PRICING AND HEDGING

2010 Unit Outline

1. DESCRIPTION OF OBJECTIVES

This unit explores the principles, theory and techniques of asset pricing, including factor pricing models and no-arbitrage models of derivative pricing. We study the models through applications to problems in investment analysis, asset allocation and risk management.

The specific learning outcomes of this unit can be summarised in terms of the following capabilities.

Upon successful completion of this unit you will:

- (1) know the behavioural and statistical assumptions underlying important asset pricing models and have developed an awareness of their rationale and limitations;
- (2) understand the principle of no-arbitrage pricing – including when the principles are applicable in practice and when they are not;
- (3) be able to apply key pricing models to practical problems – including problems in risk management and asset pricing;
- (4) have developed an understanding of how more complex payoffs can be viewed and valued in terms of more basic securities;

- (5) have developed an awareness of the need to consider the limitations of models and techniques when applied outside of textbook examples.

Please note that ‘understand’ implies that you are able to do more than simply define a concept. If you can explain it accurately in your own words with minimal reliance on technical jargon, then you are well on the way. If you can provide examples of its valid application, and examples where its application may be suspect or erroneous, then you have understood the concept.

2. PRE-REQUISITES

Entry to ACCG329 requires you to have completed the following pre-requisites:

- (1) ACCG253 (P) or ACST200;
- (2) ECON141 or STAT271

Some tutorial questions in the early weeks of the course revise important concepts from statistics and introductory finance. Make a special effort to complete the revision questions ASAP if you struggled to pass either of the pre-requisites to avoid falling behind.

3. TEXTBOOKS

Prescribed text:

Options, Futures and Other Derivatives by John Hull, 7th Edition, Prentice Hall, 2009. ISBN 978-0-13-601586-4

Recommended Text:

We will be covering approximately two and a half weeks of material based on extracts from the text:

Modern Portfolio Theory and Investment Analysis by Elton, Gruber, Brown and Goetzmann. 7th Edition, John Wiley and Sons, Inc, 2007. ISBN 978-0470-05082-2

Note that this is a prescribed text for ACCG352 so for sake of convenience you may want to buy it early if you're planning to do the unit in semester two.¹ Also note that the textbooks are available in special reserve at the library.

Refer to the unit web page for other useful references and resources.

4. STAFF CONTACTS

Full Time Staff

Convenor	Administrator
Dr Egon Kalotay	Ms Cissy Zhan
Office: E4A 513 Ph: 9850 8490 ekalotay@efs.mq.edu.au	Office: Desk 350A, Level 3, E4A Ph: 9850 4832 czhan@efs.mq.edu.au

In addition, several tutorial classes will be taken by casual tutors. Consultation times and contact details will be provided on the unit web page.

Questions about administrative matters should be directed to Cissy Zhan (Unit Administrator) or your tutor. Questions about lecture material or assessment should be directed to Egon Kalotay (Unit Convenor).

5. ASSESSMENT

Your final grade will be determined by your performance in each component of assessment as follows:

Refer to section ?? for further information about examinations and grading. Please note that it is compulsory to attend the tutorial class into which you are enrolled.

¹NOTE: At the time of writing Wiley have just released the 8th Edition of this text. If you purchase the text then you will be buying the 8th edition and there may be some differences.

Assessment Weightings for Final Grading

Class Tests	15%
Tutorial Assignments	10%
Mid Semester Test	20%
Final Exam	55%

5.1. Relating Assessment Tasks to Learning Objectives. The assessment is designed to help you fulfil, and for us to evaluate your attainment of the learning objectives. Whilst all the assessment tasks are designed with the learning objectives in mind, the primary emphasis of each can be summarised as follows:

- (1) Class tests are designed to help you consolidate your understanding of core concepts through short answer questions, thus helping you meet and monitor your progress in attaining objectives (1)-(3).
- (2) Tutorial assignments include a mix of questions designed to highlight everything from important definitions and basic calculations, to problems that require creative application of the basic principles. That is, applications that extend somewhat beyond the examples provided in the chapter. As such, doing the problem type questions (many of which are to be submitted) will help you attain objectives (1)-(4). Tutorial assignment questions based on extra readings from journals and magazines focus specifically on objective (5).
- (3) The mid-semester test and final exam are designed to assess your meeting of objectives (1)-(4). Objective (5) will be assessed primarily in the final exam.

5.2. TUTORIALS & TUTORIAL ASSIGNMENTS.

- (1) Tutorial attendance is compulsory.
- (2) You are strongly advised to attempt all assigned tutorial questions before the weekly tutorial class, and before consulting the solutions. It is very easy to be lulled into a false sense of security by simply reading questions and looking at the solutions.

- (3) **Each week you are required to submit to your tutor your attempt at the questions marked with a star (*). Submit the starred questions only.** These mini-assignments must be **submitted on time, in your assigned tutorial class.** Your assignment submission record will serve as a record of your attendance. Four of the submitted assignments, randomly selected, will be assigned a mark by your tutor. Assignments will be marked out of 3 for both effort and outcome. Here is the grading scale:
- (a) 3/3 is awarded for a complete, well-presented attempt. Answers should be substantially correct but need not be error free.
 - (b) 2/3 is awarded for a complete, satisfactory attempt. Less than full marks are awarded due to a shortfall in the substance or presentation of the submitted work.
 - (c) 1/3 is awarded for an incomplete or incoherent attempt. This mark may also be awarded if your answers are completely wrong or unsubstantiated.
 - (d) 0/3 is awarded if you do not submit the questions on time in your assigned tutorial, or, if what you submit does not merit a mark
- (4) Solutions to tutorial questions will be provided at the end of the week in which they're due.

5.3. CLASS TESTS.

- (1) Over the course of the semester you will be required to do four short tests during your tutorial class. Two tests will be held between weeks 2 and 6, and the remaining tests will be held after week 7. The format of the tests is as follows:
- (a) Duration: 15 mins
 - (b) Tests will be comprised of one or two questions very similar (if not identical) to the tutorial questions due in the week of the test.
 - (c) The questions will be straightforward, focusing on core concepts. Calculations may or may not be required.

- (d) The tests will be closed book, however, you will be provided with any non-trivial formulae required to do calculations.
- (2) Please note the following rules:
- The first test will be held in week 3, all subsequent tests will be held at times of your tutor's choosing, that is, without prior warning. You must therefore attend all tutorial classes prepared to do a test. This means doing your weekly homework.
 - Not all tutorial classes taken by a given tutor will be tested in the same week, and not all tests administered in a given week will be the same.
 - Tests must be done in your assigned tutorial class. If you cannot attend your assigned tutorial class for reasons of documented illness or misadventure, then you will be required to do a make up test.
 - As per the statement on plagiarism at the end of this document, anyone caught colluding or cheating in a class test will receive zero marks, and the matter will be pursued at University level.
- (3) Your final mark for this component of the assessment will be an equally weighted average of your best three test performances.
- (4) **The test in week 3 is designed to be an early diagnostic. If you do not do well in the test then you quickly need to understand why and rectify the problem(s). Seek remedial help if necessary.**

5.4. MID-SEMESTER TEST & FINAL EXAM.

- A 60-minute mid-semester test based on the topics covered in lectures 1-5 (inclusive) will be held during the lecture time in week 7.
- The final exam will be a three hour paper. All topics are examinable in the final.
- You must achieve a satisfactory level of performance in *both* the mid-semester test and the final exam to pass the unit.

- Non-programmable calculators may be used in both the mid-semester test and final exam. You are not permitted to use dictionaries in either the test or final exam.

6. LECTURE TOPICS, READING AND TUTORIAL ASSIGNMENTS

IMPORTANT: If I become aware of any errors in the lecture notes, tutorial solutions or any other document I will correct the problem as soon as possible, post an update and flag the revision on the web page. I place a version number on all documents so you can easily ensure you have the latest version of all materials.

*ALSO: In weeks where tutorial questions are not listed below you will find the assigned questions on the last lecture slide. **You should always check the last lecture slide for additional questions or modifications to the questions assigned for the following week.** I will also provide details of an additional readings on the final lecture slide.*

Week 1: Optimal Portfolio Choice in a Mean-Variance Framework

(Week beginning February 22, 2010)

Reading: EGBG Chapters 4 & 5.

Tutorial Questions due Week 2: Ch 4, Q 1, 3, & 4; Ch 5, Q1, 5, & 6*.*

Week 2: Factor Pricing Models: Static CAPM and the APT

(Week beginning March 1, 2010)

Reading: EGBG Chapters 13 & 16.

Tutorial Questions due Week 3: Ch 13, Q1, 2, 3, 4, 7, & 8; Ch 16, Q1, 2, 3, 4*, & 6.*

Week 3: Factor Pricing Models: Applications

(Week beginning March 8, 2010)

Reading: EGBG Chapter 7, Haugen Chapter 6

Tutorial Questions due Week 4: EGBG Ch 7, Q1, 2, 5*, & 6*, Haugen Ch 6, Question Set 1: Q 1, 2, 3, 5*, 6*, 7*, 10, 11, 12, 16*, 17 & 26.

Week 4: Informational Efficiency & Model Evaluation

(Week beginning March 15, 2010)

Reading: Thorp, E., 'A Perspective on Quantitative Finance: Models for Beating the Market', *Quantitative Finance Review*, 2003

Derman, E., 'Models', *Financial Analysts' Journal*, 2009

Also, read the first chapter of Hull as a prelude to commencing derivatives (most of it should be familiar from ACCG253).

Tutorial Questions due Week 5: Refer to the lecture slides, PLUS: Hull Ch 1, Q 1.5, 1.7, 1.9, 1.26*, & 1.27*.

Week 5: Introduction to Derivatives: Forwards & Futures

(Week beginning March 22, 2010)

Reading: Hull: Chapters 2, 3 & 5

Tutorial Questions due Week 6: Hull Ch 2, Q 2.10, 2.24, 2.25, 2.26*, 2.27, & 2.28*; Ch 3, Q 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.16, 3.17, & 3.22; Ch 5: Ch 5, Q 5.2 5.3, 5.4, 5.6, 5.7, 5.8, 5.9, 5.11, 5.12, 5.23 & 5.24*.

Week 6: Swaps

(Week beginning March 29, 2010)

Reading: Hull: Chapter 7

Tutorial Questions due Week 8: Hull Ch 3, Q 3.23*, 3.24 & 3.25*; Ch 5, 5.25 & 5.27*; Ch 7, Q 7.1, 7.3, 7.5, 7.6, 7.7, 7.10, 7.20*, 7.22, & 7.23.

Mid-Semester Break (*April 5-April 16, 2010*)

Week 7: Mid-Semester Test (*Week beginning April 19, 2010*)

No tutorials in week 7. The mid-semester test will be held this week. Most students will sit the test during the Tuesday 5-7pm lecture time on April 20. Some students may be required to sit the test at 7-9pm on the same night. We'll provide you with further information in lectures and on the web as the date approaches.

Week 8: Properties of Stock Options

(Week beginning April 26, 2010)

Reading: Hull: Chapters 9 & 10

Tutorial Questions due Week 9: Hull Ch 9, Q 9.4, 9.5, 9.6, 9.8, 9.12, 9.13, 9.14, 9.15, 9.16, 9.17, 9.23*, & 9.25*; Ch 10, Q 10.6, 10.10, 10.12 & 10.19*.

Week 9: Binomial Option Pricing & Introduction to Continuous Time Processes

(Week beginning May 3, 2010)

Reading: Hull: Chapters 11 & 12

Tutorial Questions due Week 10: Hull Ch 11, Q 11.2, 11.3, 11.5 (*using both risk neutral and replication approaches*), 11.6, 11.9, 11.14, 11.16*, 11.17*, & 11.19*; Ch 12, Q 12.3, 12.4, 12.8, 12.9, 12.12*, 12.13, 12.14, & 12.15.

Week 10: Black-Scholes-Merton & Extensions

(Week beginning May 10, 2010)

Reading: Hull: Chapters 13, 15 & 16

Tutorial Questions due Week 11: Hull Ch 13, Q 13.3, 13.4, 13.5, 13.7, 13.8, 13.10, 13.27*, 13.28*, 13.29, & 13.30; Ch 15, 15.2, 15.11, 15.13, 15.15, 15.16, 15.17, 15.24, 15.25* & 15.26*.

Week 11: “The Greeks” and Value at Risk (VaR)

(Week beginning May 17, 2010)

Reading: Hull: Chapters 17 & 20 plus additional reading TBA

Tutorial Questions due Week 12: Hull Ch 16, Q 16.4, 16.12, & 16.17; Ch 17, Q 17.3, 17.4, 17.5, 17.9, 17.12, 17.16, 17.17, 17.25*, 17.26, & 17.27*; Ch 20, Q 20.1, 20.3, 20.8, 20.9, 20.12, 20.17* & 20.18*.

Week 12: Financial Models: Limitations & Failure

(Week beginning May 24, 2010)

Reading: Taleb, N., ‘The Fourth Quadrant: A Map of the Limits of Statistics’, *The Edge*, September 2008

Interesting background: Nassim Nicholas Taleb: the prophet of boom and doom, *Sunday Times*, June 2008

Additional Reading: To be Advised.

Tutorial Questions due Week 13: Refer to lecture slides.

PLEASE NOTE: All of the questions due in the final week are to be considered starred questions, that is, they must be submitted to your tutor. Since you are not guaranteed to see your tutor prior to the final exam you are strongly advised to keep a copy of your answers for your own study.

Week 13: Revision

(Week beginning May 31, 2010)

ABOUT LECTURES: The weekly lecture is on Tuesday 5-7pm in Macquarie Theatre. Attendance at lectures is not compulsory, but highly recommended.

As a matter of basic courtesy mobile phones should be turned off during all classes (lectures and tutorials); not simply set to “silent”. More generally, please consider others and avoid talking during lectures and tutorials as it is very disruptive to both students and teachers.

LECTURE NOTES: will be available on the web, prior to the lecture - usually the week before the lecture. Log in to the unit web page on Blackboard from: <https://learn.mq.edu.au> and check the page regularly for updates.

The lecture materials define the unit content. As a general rule, if the textbook covers a topic that is not mentioned in the lectures, it will only be examinable if it is covered in one of the assigned tutorial questions.

ABOUT READINGS AND HOMEWORK: Always check the lecture materials for additional reading or additional tutorial questions. The reading guide provided above is approximate: there may be material in some of the chapters that are not covered in the unit (i.e. examinable), or there may be material in lectures not covered in the book.

7. REGARDING SPECIAL CONSIDERATION

Students requesting special consideration should acquaint themselves with the University policy on special consideration at

<http://www.student.mq.edu.au/ses/Special%20Consideration.html>

Note that applications for special consideration must be accompanied by the appropriate supporting documentation - including a Professional Authority form if you're ill.

Please note that everyone in this unit is subject to the same assessment requirements. If you do meet the criteria for special consideration then you'll be required to complete an appropriately adjusted version of the assessment that you missed.

8. REGARDING PLAGIARISM

Please acquaint yourself with the University rules on plagiarism at

<http://www.student.mq.edu.au/plagiarism/>

Please be aware that you can expect a zero tolerance approach to plagiarism or any other form of cheating in this unit. If you're caught, you will receive zero marks for your efforts and the matter will be pursued in accordance with University procedures.

9. FEEDBACK

Feedback from Students: I welcome constructive comments and suggestions for improvements to the unit. Please feel free to contact me during semester to convey your thoughts, e-mail is best.

Feedback to Students: The changes to the style and form of assessment in 2009 are designed to reduce the stress associated with the mid-semester test and final exam by encouraging and rewarding success in a series of smaller assessment tasks. Specifically, the tutorial tests provide you with a greater continuity of feedback and a good measure of whether you're on top of core concepts. Do not ignore poor performance in the tutorial tests or mid-semester test.

If you are working hard and still performing poorly then you must seek help from your tutor or lecturer straight away.

In seeking help:

- DO bring along your attempt at the question or problem at hand. Asking a specific question (even if it's basic) is likely to be far more productive than going to a tutor and saying something like 'I don't understand options'.
- DO NOT delay. More often than not students come along a week or two before the final exam to ask questions about issues they should have clarified weeks or months earlier. Usually by then, it's too late. The material in this unit is not well suited to last minute cramming.

10. SUPPORT SERVICES

Macquarie University provides a range of academic support services. Details of these services can be accessed at <http://www.student.mq.edu.au>.