MACQUARIE UNIVERSITY

FACULTY OF BUSINESS AND ECONOMICS

ACCG839
Portfolio Management

Semester 1, 2011

Department of Applied Finance and Actuarial Studies

MACQUARIE UNIVERSITY

Offering:	**2011, Semester 1**
Unit convenor:	**Dr Egon Kalotay**
Credit points:	**4**

ABOUT THIS UNIT

This unit explores the principles, theory and techniques of portfolio management. We commence by studying the simplest mean-variance optimisation problem to introduce important results from portfolio theory and asset pricing - with a particular focus on the role of factor pricing models in portfolio construction and performance evaluation. We then consider the economic rationale for active portfolio management, with reference to economic theory and results from empirical study. After studying the challenges and techniques applicable to portfolios with exposure to specific asset classes we consider alternative criteria for management and portfolio evaluation - avoiding the problematic behavioural and distributional assumptions associated with the mean-variance framework.

TEACHING STAFF

Convener: Dr Egon Kalotay
Office: E4A 513
Phone: 9850 8490

Email: egon.kalotay@mq.edu.au

CONSULTATION TIMES

Consultation hours for this unit will be provided on the Blackboard web page.

You are encouraged to seek help at a time that is convenient to you from a staff member teaching on this unit during their regular consultation hours. In special circumstances, an appointment may be made outside regular consultation hours. Staff will not conduct any consultations by email. You may, however, phone staff during their consultation hours.

Students experiencing significant difficulties with any topic in the unit must seek assistance immediately.

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.

CLASSES

The weekly class is a 3-hour seminar held at 11am-2pm on Wednesdays in W6B325.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

We will use material from several textbooks, so it is not essential to purchase any single text. If you do wish to purchase a text, then the first on the list below is probably most useful.

Investment Analysis and Portfolio Management by Reilly and Brown. 9th Edition, 2009, South-Western Cengage Learning. ISBN 13: 978-0-324-65632-9

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

Modern Investment Theory by Haugen, 5th Edition, Prentice Hall, 2001. ISBN 0-13-019170-1

Investments by Levy and Post. Pearson Publishing, 2005. ISBN 0-273-65164-1

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

TECHNOLOGY USED AND REQUIRED

Necessary technology: scientific or business calculator without alphanumeric capabilities, internet access, computer with MS Excel.

Useful technology: The MATLAB software environment is **very** useful if you intend doing this sort of work professionally.

For details of the student version refer to:

http://www.mathworks.com.au/academia/student_version/

UNIT WEB PAGE

Log in to Blackboard at: https://learn.mq.edu.au

LEARNING OUTCOMES

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 the tools and techniques of portfolio management and have developed an awareness of their rationale and limitations;

2. Understand the economic principles of arbitrage and market efficiency - with a particular focus on their implications for funds management;

3. Be able to apply key factor pricing models to practical problems in portfolio construction and performance evaluation - both as statistical tools and as economic points of reference;

4. Have an understanding of the sources of modelled risk and approaches to managing such exposures;

5. Have gained an understanding of alternative criteria for constructing portfolios and benchmarking performance;

6. Have developed an awareness of the need to consider the limitations of models and techniques when applied outside of textbook examples - including exposures to risks that are outside the scope of standard models.

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.

GRADUATE CAPABILITIES

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop the capabilities the University's graduates will need to develop to address the challenges, and to be effective, engaged participants in their world.

This unit contributes to this by developing the following graduate capabilities:

1. Discipline Specific Knowledge and Skills (See "Learning Outcomes")
2. Critical, Analytical and Integrative Thinking
3. Problem Solving and Research Capability
4. Effective Communication
5. Commitment to Continuous Learning

TEACHING AND LEARNING STRATEGY

The first two hours of each class will be a lecture-style presentation, the third hour an interactive tutorial.

1. 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.

2. Each week you are required to submit your attempt at the questions marked with a star (*). Submit the starred questions only. These mini-assignments must be submitted on time. Your assignment submission record will serve as a record of your attendance. Four of the submitted assignments, randomly selected, will be assigned a mark. Assignments will be marked out of 3 on the basis of both effort and outcome. Here is the grading scale:

   - 3/3 is awarded for a complete, well-presented attempt. Answers should be substantially correct but need not be error free.

   - 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.

   - 1/3 is awarded for an incomplete or incoherent attempt. This mark may also be awarded if your answers are completely wrong or unsubstantiated.

   - 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

3. ALTERNATIVELY: each week I will ask one or more students to present one or more answers to tutorial questions. If you are asked to present a solution then it is your presentation that will be marked on a similar scale. That is, students who present their work during class will be awarded their assignment mark for that week on the basis of their class presentation.

4. Solutions to tutorial questions will be provided at the end of the week in which they're due.

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 my choosing, that is, without prior warning. This means doing your weekly homework is essential.

- 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 <u>best three</u> 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.**

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 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.

SCHEDULE OF WEEKLY COVERAGE

Week 1: Introduction & Overview *(Week beginning February 21, 2011)*

Topics: Objectives, some statistical and mathematical background, definitions etc.
Reading: Lecture notes and supplements

Week 2: Traditional (Mean-Variance) Portfolio Theory *(Week beginning February 28, 2011)*

Topics: Risk aversion, discrete versus continuous compounding, optimisation problem, estimation issues

Reading: Elton, Gruber, Brown and Goetzmann (EGBG) Ch 4 & 5.

Week 3: Asset Allocation Parameters *(Week beginning March 7, 2011)*

Topics: Issues of estimation, shrinkage, factor models
Reading: EGBG Chapter 7, Haugen Chapter 6

Week 4: Informational Efficiency *(Week beginning March 14, 2011)*

Topics: Definitions, theory, empirical evidence with relevance to funds management.
Reading: Reilly and Brown (RB) Ch 6

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

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

Week 5: Equity Portfolio Management *(Week beginning March 21, 2011)*

Topics: Index investment, active management, investment strategies (strategic, tactical, statistical arbitrage etc), Black-Litterman
Reading: RB Ch 16.

Week 6: Bond Portfolio Management *(Week beginning March 28, 2011)*

Topics: Black-Litterman, Bond-related definitions, valuation, term structure, management strategies.
Reading: RB Ch 18 & 19

Week 7: Mid-Semester Test *(Week beginning April 5, 2011)*

No tutorial session this week.

Mid-Semester Break: April 11-April 22, 2011

Week 8: Performance Measurement and Portfolio Construction (Extensions) *(Week beginning April 25, 2011)*

Topics: Jensen, Sharpe, Treynor Indices; Information ratio, Portfolio Performance Index (PPI), Extrapolation issues.
Reading: RB Ch 25

Week 9: Derivatives and Portfolio Management *(Week beginning May 2, 2011)*

Topics: Futures, options, arbitrage and applications
Reading: Levy and Post (LP) Ch 19

Week 10: Derivatives and Portfolio Management *(Week beginning May 9, 2011)*

Topics: Example cases
Reading: LP Ch 21.

Week 11: Alternative Criteria for Portfolio Construction and Performance Evaluation *(Week beginning May 16, 2011)*

Topics: Black-Litterman revisited, preference-free investment objectives: growth optimal strategy, underperformance probability minimisation and associated performance metrics.
Reading: TBA

Week 12: Models: Limitations & Failure *(Week beginning May 23, 2011)*

Topics: TBA

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

Week 13: Summary Lecture *(Week beginning May 30, 2011)*

As a matter of basic courtesy mobile phones should be turned off during all classes (lectures and tutorials); not simply set to ``silent''.

LECTURE MATERIAL: 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 a textbook or journal reading 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 reading and tutorial questions.

I reserve the right to adjust (if required) the mix or scheduling of topics as we go. I provide a definitive set of readings and tutorial questions at the end of each set of lecture slides, and I will provide supplementary reading materials on Blackboard.

RESEARCH AND PRACTICE

- This unit uses research by Macquarie University researchers (Week 10, 11)
- This unit uses research from external sources (Most Weeks)
- This unit gives you practice in applying research findings in your assignments

ASSESSMENT WEIGHTINGS FOR FINAL GRADING

Students will be awarded an overall grade and Standardised Numerical Grade (SNG) in accordance with their performance in all assessment components, weighted as follows:

Assessment Component	Weighting
Class Tests	15%
Tutorial Assignments	10%
Mid-Semester Test	20%
Final Exam	55%

To be awarded a passing grade in this unit (SNG of 50% or higher) a student must pass the final exam (attain a mark of 50% or higher in the final exam).

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:

- 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)-(5).

- 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 textbooks. As such, doing the problem type questions (many of which are to be submitted) will help you attain objectives (1)-(5). Tutorial assignment questions based on extra readings from journals and magazines focus specifically on objective (6).

- The mid-semester test and final exam are designed to assess your meeting of objectives (1)-(5).

- The 60-minute mid-semester test will cover topics from the first 5 weeks of lectures and the associated tutorials.

- The final exam will be a 3-hour paper. All topics are examinable in the final.

- 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.

	Tutorial Assignments	Class Tests	Mid-Semester Test	Final Exam
Due date	Weekly	Week 3 & Random in-class	Week 7	Exam Period
% Weighting	10%	15%	20%	55%
Grading method - marking criteria/ standards	Detailed on Page 4	Task specific - provided upon return of marked work	Task specific - provided upon return of marked work	Assessed in accordance with marking guide
Submission method	In class	In class	In class	University exam
Feedback *(type, method, date)*	Mark awarded in accordance with disclosed standards	Mark awarded in accordance with disclosed standards	Mark awarded in accordance with disclosed standards	Final Grade
Estimated student workload (hours)	13 hours weekly (including reading)	15min x 4 in-class	1-hour + reading time	3-hour + reading time
Learning outcomes assessed				
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
4	X	X		X
5	X	X		X
6	X			X
Graduate capabilities assessed				
1	X	X	X	X
2	X	X	X	X
3	X	X		X
4		X	X	X

A final examination is included as an assessment task for this unit to provide assurance that:

i)   the product belongs to the student and
ii)   the student has attained the knowledge and skills tested in the exam.

A 3-hour final examination for this unit will be held during the University Examination period.

The University Examination period in First Half Year 2011 is from June 6, 2011 to June 27, 2011.

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.

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.htm

ACADEMIC HONESTY

The nature of scholarly endeavour, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim

- all academic collaborations are acknowledged

- academic work is not falsified in any way

- when the ideas of others are used, these ideas are acknowledged appropriately.

Further information on the academic honesty can be found in the Macquarie University Academic Honesty Policy at
http://www.mq.edu.au/policy/docs/academic_honesty/policy.html

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.

GRADES

Macquarie University uses the following grades in coursework units of study:

HD - High Distinction
D - Distinction
CR - Credit
P - Pass
F - Fail

Grade descriptors and other information concerning grading are contained in the Macquarie University Grading Policy which is available at:

http://www.mq.edu.au/policy/docs/grading/policy.html

GRADING APPEALS AND FINAL EXAMINATION SCRIPT VIEWING

If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade and/or viewing your final exam script please refer to the following website which provides information about these processes and the cut off dates in the first instance. Please read the instructions provided concerning what constitutes a valid grounds for appeal before appealing your grade.

http://www.businessandeconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals

SPECIAL CONSIDERATION

The University is committed to equity and fairness in all aspects of its learning and teaching. In stating this commitment, the University recognises that there may be circumstances where a student is prevented by unavoidable disruption from performing in accordance with their ability. A special consideration policy exists to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. The policy is available at: http://www.mq.edu.au/policy/docs/special_consideration/procedure.html

STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at http://www.student.mq.edu.au.

IT CONDITIONS OF USE

Access to all student computing facilities within the Faculty of Business and Economics is restricted to authorised coursework for approved units. Student ID cards must be displayed in the locations provided at all times.

Students are expected to act responsibly when utilising University IT facilities. The following regulations apply to the use of computing facilities and online services:

● Accessing inappropriate web sites or downloading inappropriate material is not permitted. Material that is not related to coursework for approved unit is deemed inappropriate.

● Downloading copyright material without permission from the copyright owner is illegal, and strictly prohibited. Students detected undertaking such activities will face disciplinary action, which may result in criminal proceedings.

Non-compliance with these conditions may result in disciplinary action without further notice.

Students must use their Macquarie University email addresses to communicate with staff as it is University policy that the University issued email account is used for official University communication.