

MACQUARIE
UNIVERSITY



FACULTY OF
BUSINESS AND ECONOMICS

ACST829

**CAPITAL BUDGETING AND
FINANCIAL MODELLING**

Semester 1, 2010

Department of Actuarial Studies

**MACQUARIE UNIVERSITY
FACULTY OF BUSINESS AND ECONOMICS
UNIT OUTLINE**

Year and Semester: Semester 1, 2010

Unit convenor: Tim Kyng

[Prerequisites / Corequisites:] There are no formal prerequisites or corequisites for ACST829. However, students are assumed to have completed a unit in corporate finance (e.g. ACCG808 or ACST827) or financial mathematics, or something equivalent and to be familiar with the Excel spreadsheet software package.

Students in this unit should read this unit outline carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

ABOUT THIS UNIT

The purpose of the unit is:

- to teach students about established methods for the valuation and appraisal of investment projects
- introduce the new “real options approach” to investment appraisal
- learn to use Microsoft excel to build the financial models and perform the calculations for these methods
- introduce students to visual basic / excel macros

Topics covered include:

BASIC FINANCIAL THEORY

- Basic financial mathematics: interest rates, present value, future value, annuities, bond valuation.
- Methods for investment appraisal: Net Present Value, Internal Rate of Return, Payback Period, Accounting rate of return.
- Analysis of leasing and leveraged leasing using IRR, NPV and other measures. Analysis of lease versus buy, lease versus borrow and buy, sale and leaseback decisions.

CAPITAL BUDGETING BASICS

- Overview of capital budgeting
- Project analysis under certainty: applications of NPV and IRR.
- Estimation of cashflows and discount rates for project appraisal

- Project analysis under risk: risk and uncertainty, the risk adjusted discount rate and certainty equivalent approaches, cost of capital
- Estimation of parameters for financial models: quantitative and qualitative approaches
- Approaches to dealing with risk and uncertainty in project appraisal: sensitivity and breakeven analysis, Simulation concepts and methods

OPTIONS AND REAL OPTIONS ANALYSIS

- Introduction to options: calls and puts, European and American options,
- Valuation of options using Black Scholes formulae, Monte Carlo Simulation and Binomial Tree methods: The arbitrage free / risk neutral valuation methodology.
- Options embedded in investment projects.
- Flaws in existing methods of project appraisal
- The “real options approach” to project valuation
- Exotic options formulae relevant to real options and project appraisal (compound options, switching options, chooser options, etc)

EXCEL FOR FINANCIAL MODELLING

- Introduction to excel
- Writing excel formulae, copying and pasting, absolute and relative cell referencing.
- Financial statement modelling / Financial analysis of leasing and leveraged leasing / Estimating beta factors and the security market line
- elementary methods of forecasting: linear regression, multiple regression, moving averages and weighted moving averages
- Excel functions: statistical functions, financial functions, date functions, array and matrix functions / using excel for simple and multiple linear regression / Monte Carlo simulation in excel
- Building and using binomial trees for valuation of contingent claims and options

VISUAL BASIC FOR APPLICATIONS (VBA)

- User defined functions
- Conditional execution: using if and select case statements
- Types and loops
- Macros and user interaction
- Arrays: simple, multidimensional and dynamic arrays

TEACHING STAFF

Timothy Kyng (Ph: 9850-7289 Rm: E4A614 email: tkyng@efs.mq.edu.au)

Consultation Hours - Friday 2pm-4pm or other times by mutual agreement.

CLASSES

For campus students:

- A 2-hour lecture will be held each week at E4B214 on Friday from 10am to 12pm.
- A 1-hour tutorial will be held each week at E4B labs on Friday. Please refer to eStudent for your allocated tutorial location.
- Further information on timetable can be found on the University web site at: <http://www.timetables.mq.edu.au>

For distance students:

- iLectures will be available by the use of Web Conferencing Software. That means you can participate lectures live. The exact URL to participate lectures live will be provided on Blackboard.
- All lecture and tutorial exercises and solutions will be available on Blackboard.

RECOMMENDED TEXTS AND/OR MATERIALS

Capital budgeting: by Dayananda et al (ISBN 0 521 52098 3)

Financial Modelling: by Simon Beninga (ISBN 0 262 02482 9)

For the novice Excel user, the book Teach Yourself Visually Excel 2003 by Maran (ISBN 0-7645-3996-5) is a good way to quickly learn the basics of excel assumed for this unit.

UNIT WEB PAGE

To access the Blackboard website, go to <http://learn.mq.edu.au> and login using your usual login and password. You will then have access to the websites for all the units in which you are enrolled. If you have any trouble logging in (e.g. you have forgotten your password), please contact the Student IT Helpdesk.

Blackboard will contain all materials for this subject.

LEARNING OBJECTIVES AND OUTCOMES

The learning objectives of this unit are:

- to gain an understanding of current established methods for the valuation and appraisal of investment projects
- develop an introductory understanding of the “real options approach” to investment appraisal
- to learn to use Microsoft excel to build the financial models and perform the calculations for these methods
- learn how to develop user defined functions using visual basic and use them from within excel

The learning outcomes of this unit are:

- to be able to apply current established methods for the valuation and appraisal of investment projects
- demonstrate awareness of the “real options approach” to investment appraisal and be able to apply it in simple situations
- develop an ability to use Microsoft excel to build the financial models and perform the calculations
- develop expertise in using excel’s built in financial and other functions
- be able to explain the concepts covered in the course
- develop problem solving skills and in particular develop skills in formulating a mathematical / financial problem and its solution into a spreadsheet solution
- be aware of the need to document the work you do when solving problems using spreadsheets

TEACHING AND LEARNING STRATEGY

- The unit is taught via a combination of lectures, tutorial exercises and computer lab exercises. We cover many examples of financial valuation and decision making problems and how to solve these using spreadsheets. Our approach is one of learning by example and by practicing using excel to solve financial decision making problems.
- Students are expected to work independently. The assignments and the final exam will include the development of various excel spreadsheets and documentation for these, as well as essays / written reports and so on.
- Week-by-week list of the topics to be covered . (If this is too long to be placed here, you might choose to put it at the end of the unit outline.)

RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES

Assessment

Two assignments: 50%

Final exam: 50%

The assignments and the final exam will include the development of various excel spreadsheets and documentation for these, as well as essays / written reports.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable.

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. Information about unavoidable

disruption and the special consideration process is available at <http://www.reg.mq.edu.au/Forms/APSCon.pdf>

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.)

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period.

PLAGIARISM

The University defines plagiarism in its rules: "Plagiarism involves using the work of another person and presenting it as one's own." Plagiarism is a serious breach of the University's rules and carries significant penalties. You must read the University's practices and procedures on plagiarism. These can be found in the *Handbook of Undergraduate Studies* or on the web at: <http://www.student.mq.edu.au/plagiarism/>

The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

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>.