



AFCP855

Life Cycle Investing

AFC Term 4 MB 2017

Dept of Applied Finance and Actuarial Studies

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Disclaimer

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General Information

Unit convenor and teaching staff Lecturer Nicholas Callil nicholas.callil@mq.edu.au Contact via Email
Credit points 2
Prerequisites (Admission to MAppFin or GradDipAppFin) and (AFCP801 or ECFS865)
Corequisites
Co-badged status
Unit description This unit provides an in-depth knowledge of the challenge of understanding the nature of whole of life investing. A framework is developed to model the various risks followed with techniques to solve it whilst addressing the various complexities and uncertainties including longevity, inflation, and interaction with age pension. This unit will assist those involved in developing, managing and analysing any investment strategy for whole of life investing, particularly in the accumulation and retirement phases of the superannuation and retirement industry.

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 and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Be able to specify and develop solution techniques for whole of life investing within the specified asset-liability framework, and be able to apply them in practice.
- Be able to incorporate various complexities into the asset-liability model aiming to

capture the material drivers impacting retirement outcomes.

Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.

Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

General Assessment Information

To pass this unit (requires a Mark of 50 or better) the student must pass the final examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>In Class Group Exercise</u>	10%	No	Last day of class
<u>Assignment</u>	40%	No	Refer to iLearn
<u>Final Exam</u>	50%	Yes	Refer to Timetable

In Class Group Exercise

Due: **Last day of class**

Weighting: **10%**

Summary of Assessment Task

Individual / Group: Group

Due Date: Last day of class (details will be handed out in class)

Grading Method: Refer to 'Standards Required to Complete the Unit Satisfactorily' section

Submission Method: In class

Duration: Approx. 20 minutes for each group to be confirmed by lecturer

Extension Requests:

- You are expected to make yourself available for assessment.
- If you have extenuating circumstances that prevent you from submitting your assignment by the due date, please make arrangements with your lecturer prior to the due date.
- Unless prior arrangements have been made, any late submission of assignments will automatically be penalised. In the absence of special circumstances, a zero mark will apply.

On successful completion you will be able to:

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

Assignment

Due: **Refer to iLearn**

Weighting: **40%**

Summary of Assessment Task

Individual / Group: A combination of individual and group work (refer to Assignment coversheet).

Due Date: Refer to the Unit's iLearn site

Grading Method: Refer to 'Standards Required to Complete the Unit Satisfactorily' section

Submission Method: Via Turnitin on iLearn.

Duration: Refer to Assignment coversheet

Extension Requests:

- If you have extenuating circumstances that prevent you from submitting your assignment by the due date, please make arrangements with your lecturer prior to the due date.
- Unless prior arrangements have been made, any late submission of assignments will automatically be penalised. In the absence of special circumstances, a zero mark will apply.

On successful completion you will be able to:

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Be able to specify and develop solution techniques for whole of life investing within the specified asset-liability framework, and be able to apply them in practice.
- Be able to incorporate various complexities into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.

Final Exam

Due: **Refer to Timetable**

Weighting: **50%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

Summary of Assessment Task

Individual / Group: Individual

Due Date: Refer to Timetable.

Assessments: Different Class Groups have different deadlines. Students should find the timetable and dates relevant to their group at www.mafc.mq.edu.au

Grading Method: Refer to 'Standards Required to Complete the Unit Satisfactorily' section

Submission Method: As per MAFC Program Rules & Procedures at www.mafc.mq.edu.au

Duration: 2 hours plus 10 minutes reading time

Examination Conditions:

- All examinations are closed book. However, permitted materials and aids are:
 - A study sheet, prepared by the student (typically one double-sided A4 page).
 - Calculators. Permitted calculators are noted under 'Calculators' below.
- Exam times and locations are noted in the unit timetable at www.mafc.mq.edu.au.
- Refer to MAFC Program Rules & Procedures at www.mafc.mq.edu.au.

Extension Requests:

- You are expected to present yourself for examination at the time and place designated in the relevant MAFC Timetable at www.mafc.mq.edu.au.
- Deferral of an examination is not permitted, unless special consideration has been approved by the Director of Studies under the University's Disruption to Studies Policy.
- Refer to MAFC Program Rules & Procedures at www.mafc.mq.edu.au for information on the University's Disruption to Studies Policy or non-attendance at an examination.

On successful completion you will be able to:

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Be able to incorporate various complexities into the asset-liability model aiming to

capture the material drivers impacting retirement outcomes.

- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

Delivery and Resources

CLASSES

Face-to-Face Teaching: Generally 22 hours

Timetable: Detailed timetable for classes are on the Centre's web site www.mafc.mq.edu.au

Class Changes:

Students will only be permitted to change classes if authorised by the Applied Finance Centre.

Request for changes must be made:

- By completion of a Change of Unit Form, available on the Centre's web site at www.mafc.mq.edu.au; or
- In person by going to reception at the relevant Applied Finance Centre location.

Consultation Times:

Students who wish to contact any of the teaching staff may do so through:

- iLearn, in relation to general queries (so that all students may benefit); or
- Individual consultation with the lecturer by email in the first instance, if necessary.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

Text: There is no text for this unit.

Additional Readings:

- Additional readings are included in the unit notes and or iLearn.
- **Students should assume these readings are examinable unless otherwise advised.**

Lecture Notes: Available in printed form and electronically via iLearn.

Study Problems:

- Students are required to work systematically through end of chapter problem sets. These problems will not be collected but they will help you prepare for the exams. Answers, but not worked solutions, to set problems are provided on iLearn.

Pre-Unit Materials:

- Information papers on statistics, regression, accounting and other material may be found at <http://mafcstudents.mq.edu.au/new-to-mafc/pre-course-materials/>
- Students should work through this material prior to commencing the degree.
- The material will remain a useful reference as students progress through the program.

Calculators:

- A financial calculator that can handle time value of money calculations, logs and power functions is required.
- The Hewlett Packard calculator hp17bII+ is recommended.
- In examinations, hand held calculators are permitted. Mobile phones and computers are not permitted.

Assumed Access:

- Access to a computer with word processing and spreadsheet capability is assumed, as is general student computer literacy.
- Also assumed is access to a Web browser (eg Internet Explorer or Firefox) and email software and a student's own connection to an internet service provider.

TECHNOLOGY USED AND REQUIRED

Unit iLearn Site:

- Found by logging on to iLearn ilearn.mq.edu.au, then clicking on **Life Cycle Investing** under the Term heading.
- This is where you will find a link to forums, downloadable resources and other important pages.
- Forums allow you to communicate with other students and lecturer(s) and may provide supplementary material.
- You are requested to post questions to forums at least 24 hours prior to an assignment submission date or examination date. Questions posted after that time may not be answered. **Please try to not leave your questions to the last few days.**

Important Notice:

- It is important that you familiarise yourself with iLearn.
- Students should check iLearn regularly (minimum twice a week and prior to all lectures) and look for updates and distribution of materials (including case studies) related to the unit or assessments and, if relevant, participate in forum discussions.

Unit Schedule

The sections are covered over 6 lectures.

TOPIC 1: INTRODUCTION TO LIFE CYCLE INVESTING

- 1.1. Introduction to Life Cycle Analysis
- 1.2. Life Cycle of liabilities?
- 1.3. Industry Background
- 1.4. What is the safe withdrawal rate?

TOPIC 2 : THE PROBLEM TO SOLVE

- 2.1. State as an asset-liability problem
- 2.2. Life cycle cash flows
- 2.3. Developing a Life Cycle Cash Flow Model
- 2.4. How do you solve this problem
- 2.5. Analyse investment volatility

TOPIC 3: TECHNIQUES TO SOLVE THE INVESTMENT STRATEGY PROBLEM

- 3.1. Solving the LCI problem
- 3.2. Case studies: Some known solutions introduction
- 3.3. Apply Monte Carlo technique
- 3.4. Using the Monte Carlo technique

TOPIC 4: APPLY TO VARIOUS CASES

- 4.1. Introduction
- 4.2. Estimated retirement outcomes for a young person
- 4.3. Is there time for an empty nester to improve their retirement outcome?
- 4.4. Now that I'm at my retirement date, what is my SWR?
- 4.5. Case studies: Safe withdrawal rates from various studies

TOPIC 5: ROUND OUT THE SOLUTION

- 5.1. Longevity risk
- 5.2. Impact of social security
- 5.3. Inflation risk
- 5.4. Analyse "sequencing risk"
- 5.5. Concepts to add additional features

TOPIC 6: MANAGING THE END GAME: TECHNIQUES TO MANAGE THE UNCERTAINTIES IN RETIREMENT

- 6.1. Recap
- 6.2. Monitor, assess and adjust
- 6.3. Products that manage some risks and what is given-up
- 6.4. In class exercise - monitoring

Learning and Teaching Activities

Strategy

The Master of Applied Finance degree adopts a deep teaching and learning strategy, in which Students acquire and retain knowledge and also are able to make sense of the issues and concepts and apply them in the “real world”. The degree relies heavily on student engagement and participation by: (a) Continuous learning throughout the semester. This is encouraged through a combination of students undertaking prescribed reading throughout the units and / or completion of practice problems, case studies, assignments, class presentations etc and interaction via forums in the unit’s iLearn site; and (b) Assessments, which enable the student to demonstrate his / her understanding of the learning objectives achieved through the continuous learning.

Student Participation

Students participate in this unit by: (a) Attending lectures and participating in class discussion; (b) Before each class, completing the recommended readings of notes and text, and working systematically through suggested problem sets; (c) Interacting on the unit’s iLearn site; and (d) Completing all assessment tasks and exams. On average the unit will require students to complete, for every hour of class time, approximately 3 hours private study.

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_2016.html

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

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

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/

Results

Results shown in *iLearn*, 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](#).

Students should also consult the MAFC Program Rules & Procedures found at <http://www.mafc.mq.edu.au>

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 enquiry service (MAFC-specific)

For all student enquires, please contact studentsupport@mafc.mq.edu.au

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.

Learning Skills

Learning Skills (http://www.students.mq.edu.au/support/learning_skills/) 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 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://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 - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

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

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Be able to specify and develop solution techniques for whole of life investing within the specified asset-liability framework, and be able to apply them in practice.

- Be able to incorporate various complexities into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
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- Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

Assessment tasks

- In Class Group Exercise
- 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

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Be able to specify and develop solution techniques for whole of life investing within the specified asset-liability framework, and be able to apply them in practice.
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Assessment tasks

- In Class Group Exercise
- Assignment
- Final Exam

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Be able to specify and develop solution techniques for whole of life investing within the specified asset-liability framework, and be able to apply them in practice.
- Be able to incorporate various complexities into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.

Assessment tasks

- In Class Group Exercise
- 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

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms to manage uncertainties impacting retirement outcomes as they arise through life.

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able

to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcome

- Understand and communicate the whole of life investing challenge in a relevant asset-liability framework.

Important Notice

This Unit Guide may be subject to change. The latest version is on the Centre's web site www.mq.edu.au.

Students should read the Unit Guide carefully at the start of semester. It contains important information about the unit. If anything is unclear, please consult one of the unit lecturers.

Standards Required to Complete the Unit Satisfactorily

University Policy on Grading:

- Macquarie University's Academic Senate has established a Grading Policy available at <http://www.mq.edu.au/policy/docs/grading/policy.html>. Your final result will include:
 - A Grade ranging from Fail Hurdle to High Distinction; and
 - A numerical Mark, which is a summation of the individual assessment components, providing the examination component is passed.
- It is important to note:
 - The Policy does not require that a minimum or maximum number of students are to be failed in any unit;
 - Grades will not be allocated to fit a predetermined distribution; and
 - Grades for all individual assessment items will be released to students, but Marks may not necessarily be released,

Specific Unit Grading:

- To pass this unit (requires a Mark of 50 or better) the student must pass the final examination.
 - Students who have attained a total raw mark of 50% or greater in a unit, but have failed the Unit's exam requirement and who have demonstrated "sufficient effort" in the exam, will be granted a single opportunity to sit a Supplementary Exam which will be graded on a pass/fail basis. The unit mark and grade for

students who pass this examination will be those corresponding to the original total raw mark of all their assessment tasks, including the original exam. That is, the Supplementary Hurdle Exam only determines the meeting of the hurdle requirement. Students who have attained a raw mark of 50% or greater in a unit, yet failed all attempts at the requirement, will be awarded an FH grade with a final mark of 49.

- All final Marks and Grades in the Applied Finance Centre are determined by a grading committee and are not the sole responsibility of the unit convenor.
- The core criteria used to assess student work in this unit are:
 - Knowledge and understanding: Understanding key ideas, knowledge and use of concepts.
 - Application: Ability to apply theoretical ideas and frameworks in practice and in a critically reflective way.
 - Reasoning and analysis: Ability to analyse, use critical reasoning and principles to formulate a position, balancing theory and personal reflection.
 - Professional literacy and research: Understanding of professional factors (language and landscape) and ability to undertake appropriate research.
 - Communication and presentation: Ability to communicate and present effectively (written and oral, as relevant).
 - Use of mathematical and statistical ideas: Ability to use mathematical and statistical ideas, methods and formulae appropriately.
- Performance in relation to each of these criteria are assessed against the University's grading descriptors:

Grade	Expectation
High Distinction	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the discipline.
Distinction	Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
Credit	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the discipline.
Pass	Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.

Grade	Expectation
Fail	Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.
Fail Hurdle	Student has obtained a raw mark over 50, yet failed all available attempts of at least one hurdle assessment.

Review of Grade and final examination Script viewing:

- A student who has been awarded a final grade for a unit and who does not believe it is an accurate reflection of their performance, and has grounds for such a claim and can demonstrate those grounds, may apply to have their grade reviewed.
- For information on requesting a review of grade and/or viewing your final exam script, please refer to the University's Grade Appeal Policy at <http://www.mq.edu.au/policy/docs/gradeappeal/policy.html> and MAFC Program Rules & Procedures at <http://www.mafc.mq.edu.au>.