

INVESTMENT

ASSIGNMENT SEMESTER 2 2023

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Preamble

The main purpose of the assignment from your perspective is to help you develop skills required at the Fellowship level. These skills are also required by employers.

The specific skills that are being developed and assessed in the assignment are the ability to

- apply subject material in an unfamiliar context;
- plan a model;
- determine the appropriate assumptions for the model;
- build and manipulate a spreadsheet for the model;
- communicate relevant points in language appropriate to the audience, in a logical and coherent manner; and
- meet business standards for presentation of work in written materials and spreadsheets.

You will be required to apply knowledge to specific situations in the time-constrained end of semester examination. This assignment provides an opportunity for you to think more deeply and spend more time preparing a detailed answer. This assignment will also help you reflect on your writing skills. Whilst there is ample time to write any required report for the assignment, you should consider if you need to spend more time improving your writing skills to help you pass the examination.

The assignment will require you to create a set of assumptions for the model that you build. There is no single right answer, consequently you will be assessed on your reasoning and process. We therefore want to understand *how* you derived your assumptions. It is important that you describe what you did as the marker needs to understand if you are able to apply knowledge to the specific situation described in this assignment. We are also looking for you to demonstrate that you can deal with uncertainty in a reasonable way.

A key actuarial skill is to obtain a grasp of the qualitative nature of outputs from models and describe them in a non-technical manner. This assignment avoids complicated modelling and is designed to test your ability to deduce and communicate issues relating to the valuation of a listed equity, using simple models.



Marking Guide

This assignment represents 20% of the available marks for the Investment subject. Your assignment mark will be combined with your exam mark to determine your overall result for the subject.

If you choose not to submit an assignment, or if you do not submit a reasonable attempt, then you are still entitled to sit the examination, but it is unlikely that you will reach pass standard.

It is anticipated that you will spend between 15 and 20 hours to complete the assignment. This is a guide as some students will spend more than this and some students will spend less.

A detailed rubric is provided with the assignment question and will be used by the markers to assess your performance. The rubric has been posted on the LMS to guide you as to what is required to achieve full marks for each part of the assignment. You should check that the components of your answer cover the items in the rubric.

Submission

The deadline for submission is **12:00pm noon (AEST) on 28 August 2023**.

Submit your assignment via the Assignments page in Canvas. If you experience technological issues when submitting your assignment, please send a copy of your assignment by email to education@actuaries.asn.au.

Penalties apply for late submissions (see section on 'Penalties'). You should anticipate potential delays by preparing and submitting your work in advance of the deadline.

Should circumstances arise that mean you cannot submit your assignment on time, you should contact the subject's Chief Examiner and education@actuaries.asn.au in advance of the deadline and apply for special consideration.

In general, late submissions will not be accepted. You should allow for the possibility of potential delays by preparing and submitting your work in advance of the deadline.



File format

The submitted documents must consist of a Word file and an Excel file. Files in other formats will not be marked. The naming convention for both files is:

INV 2023 S2 Assignment member ID(file extension as appropriate).

Please note that if you resubmit an assessment, Canvas automatically adds a suffix to the file name (such as '-1' for the first resubmission). You do not have to make any adjustment for this.

Coversheet

A coversheet for the assignment is provided on the Assignments page in Canvas. Complete and attach this coversheet as the front page of your assignment.

Word limit

Some questions in the assignment have a specific word or time limit. Markers will not read or watch any part of your answer that exceeds this limit. Keep your word count within any limits that are specified. The word count includes any text within tables, text boxes or images consisting primarily of text. The word count does not include:

- contents table or index; and
- references to sources used.

Keep in mind one of the key principles taught in the Communication, Modelling and Professionalism subject: always write as clearly and succinctly as possible, while still including enough information that will be useful for your audience. With that in mind, consider whether each word, sentence, or paragraph you include in your assignment adds to or detracts from the message you are trying to convey. Importantly, know that 'more' is not necessarily 'better'.



Plagiarism

By submitting your assignment, you are implicitly stating that the work is your own.

Remember that an important aspect of being a professional actuary is to always act with integrity. Committing plagiarism by copying another person's work or not properly referencing other sources used in your assignment is a breach of the Integrity principle under the Actuaries Institute's Code of Conduct.

Any suspected plagiarism will be referred to the Institute's Executive General Manager, Education for review. Depending on findings, a complaint regarding the member may be made to the Institute's Conduct Committee. Subject marks may not be released until the matter is resolved.

Penalties

Deadline

Penalties will be applied to late submissions without prior approval.

If you submit an assessment after the due date (whether that is the original due date or any extended due date you have been granted), the following penalties apply:

- within 24 hours of due date and time: 10% x maximum mark available;
- 1 to 2 days late: 20% x maximum mark available;
- 2 to 3 days late: 30% x maximum mark available;
- 3 to 4 days late: 40% x maximum mark available;
- 4 to 5 days late: 50% x maximum mark available;
- >5 days late: 100% x maximum mark available (i.e., assessment score = 0).

Please note that 'days' above refers to calendar days, not working days.

Incorrectly formatted submissions

There is no direct penalty if an assessment is submitted in a format with an incorrect file name or an incorrect format (e.g., submitted as a word document when a pdf document was required).



If a submission does not include a relevant identifier (member ID) in the file name, or an incorrect identifier is used, then it may take time to identify you as the student and you may be asked to resubmit your work with an appropriate identifier.

If you fail to submit in the file format that was required, then you may be required to resubmit your work with the correct file format, particularly relevant to modelling or coding assignments.

If either situation arises then this will probably cause you to submit late and hence incur the late submission penalties outlined above. Students should therefore follow all assessment instructions provided.

Feedback

Our approach to feedback is for students to receive their grade, general feedback and a sample assessment marked as 'Significantly above pass level'.

You should review the general feedback that is provided to all students as well as the sample assessment. After reviewing the general feedback, you should use the rubric to grade the sample assessment and your submission. This will help you to compare the assessments and identify areas where your submission could have been improved.

Our belief is that this active approach to studying will provide you with a deeper understanding of where you need to improve. This is the best way for you to learn about your areas of strength and weakness. We do not provide students with individual feedback on their assessments.

At the end of the semester, you will receive:

- a letter to indicate whether you have passed or failed the subject;
- if you have failed the subject, a breakdown of your grade for each assessment;
- general feedback to all students about assessment performance; and
- sample assessment(s) that were graded as 'Significantly above pass level'.



Assignment Context

You are a consulting actuary who is advising the Board of Trustees of a newly established public offer defined contribution superannuation fund (the Fund).

The Fund competes with other similar funds to attract members. Many of the competitor funds offer a range of investment options to members but most members invest in a multi asset class investment option offered by each of these funds, which is suitable to their risk tolerance). These multi-asset class investment options typically have investment objectives expressed in terms such as:

- the return target is inflation plus a margin of $R\%$ p.a. over rolling T year periods; and
- there will be no more than N negative annual returns over a 20-year period.

Defined contribution funds usually compete for members on the basis of investment returns and costs to members.

The Board of Trustees wants the newly established fund to be competitive and attract members of other funds by achieving competitive investment returns at a reasonable cost.

The Fund offers two investment options which have multi-asset class portfolios:

- a growth oriented option for most working age members; and
- a more defensive option for members in retirement and drawing a pension from their account or near to retirement.

The board has asked you to conduct an analysis and make recommendations on:

- the investment objectives for each of the two investment options; and
- the strategic asset allocation for each investment option that is appropriate to meeting the investment objectives.

You have been provided with data on the return of various asset classes as well as inflation over the period 1990 to 2022, via the LMS: **INV 2023 S2 Assignment data file.xls**

You also have access to publicly available information published by major Australian superannuation funds which are among the competitors of the Fund.



Assignment Questions

(Total 100 marks)

You are required to prepare:

- a clear and concise report that:
 - explains the data and the model that you have used in your analysis;
 - explains the assumptions required in the model;
 - proposes the investment objectives and strategic asset allocation for each of the investment options.
- an excel spreadsheet that shows how you have conducted the necessary analysis.

The report should be no more than 3500 words including any words that are contained in tables.

(Quality of report writing counts for 10 marks in this assignment.)

The questions to be answered are:

- 1)** Explain why you decided to use the particular data (sourced from the file made available in the LMS) and any of the other information that you have sourced and used in your analysis.

(10 marks)

- 2)** Explain the assumptions that have been required in the model that you have used for your analysis. Note that there may be assumptions needed that are not numerical. You should ignore taxation.

(15 marks)

- 3)** Describe how you have estimated the parameters (the numerical values) assigned to each assumption where a numerical parameter is required.

(10 marks)

- 4)** Explain how you have allowed for uncertainty in the model.

(10 marks)



- 5) Demonstrate your model by attaching the Excel spreadsheet that you have built showing the input to and output from the spreadsheet analysis that you have completed and how variations in assumptions affected the output. Note that the Excel spreadsheet needs to be lodged as a separate document even if parts of it are shown in the Word document.

(10 marks)

- 6) Explain how you derived the investment objectives for each of the investment options in terms of measures of return and risk.

(10 marks)

- 7) Explain how you derived the strategic asset allocation for each of the investment options.

(10 marks)

- 8) Propose the investment objectives and strategic asset allocation that you think are appropriate for each of the two investment options.

(15 marks)

END OF ASSIGNMENT