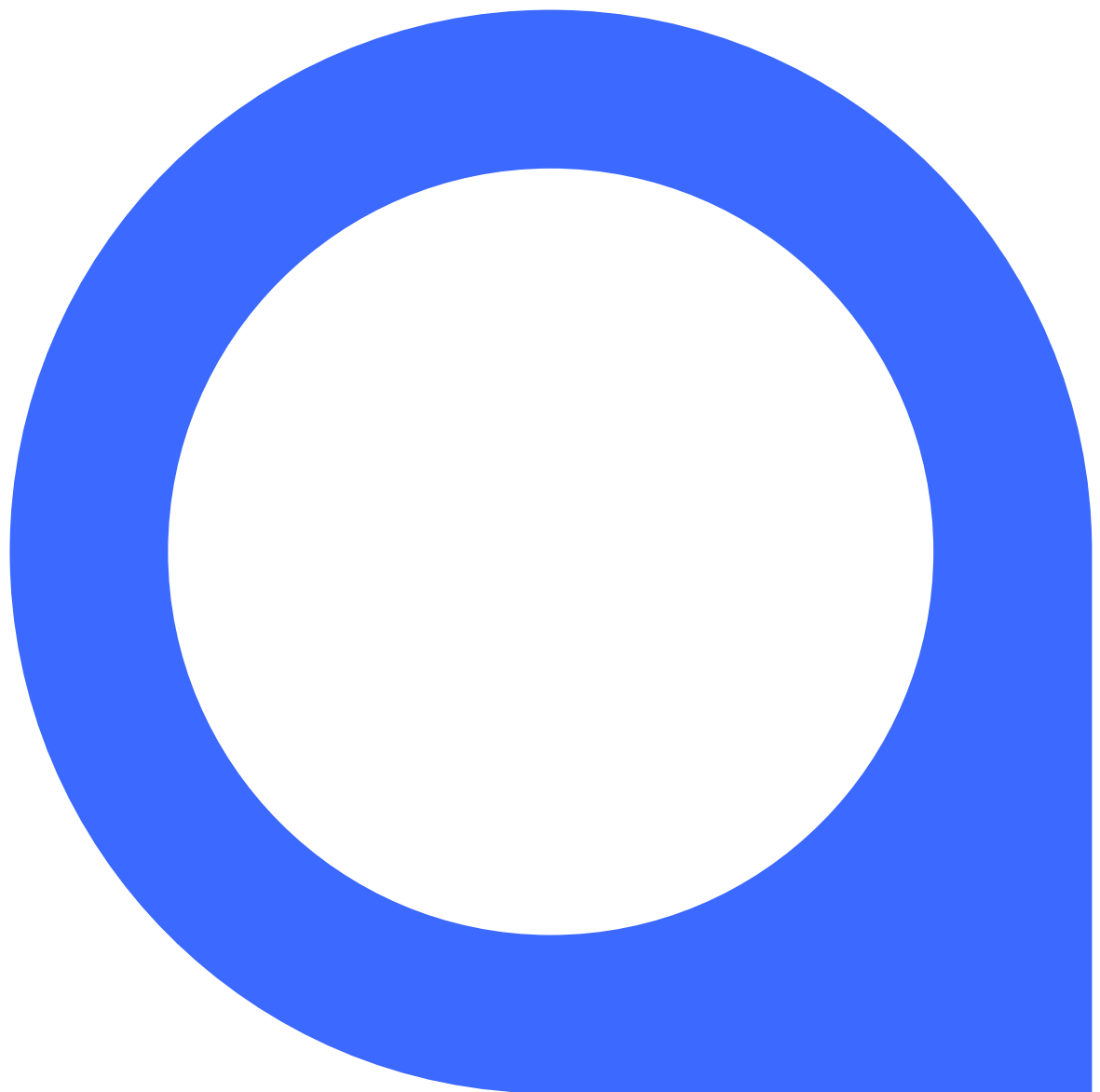


Asset Liability Management

Assignment Semester 2 2025





Preamble

The main purpose of the assignment from your perspective is to help you to develop your understanding of a major asset class and your skills in analysis and writing.

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

- research and explain subject material in an unfamiliar context;
- communicate relevant points in language appropriate to the audience, in a logical and coherent manner; and
- meet business standards for presentation of written materials.

These skills will also help you pass the end of semester assessment and perform well in the workplace.

This assignment provides an opportunity for you to think deeply, spend time preparing a detailed answer and self-reflect on your **writing** skills. Whilst there is ample time to write your assignment answers, you should ask yourself if you need to spend more time improving your writing skills to help you pass time-limited examinations.

There may not be a single correct answer to the question(s) posed. Ensure you have adequately demonstrated your steps, assumptions, reasoning and checks to the marker(s) so that your answer can be considered in context.



Marking Guide

A percentage mark of at least 60% is required to achieve at least a pass grade for this assignment, which is consistent across all the subjects' assignments. This is only an indicative pass mark and the final pass mark for the subject overall may be different.

This assignment represents 20% of the available marks for the ALM subject¹. 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 for the subject.

It is anticipated that you will spend at least 20 hours to complete the assignment. In past semesters, some students have spent significantly more time than this, particularly those students who aim for a grade of Above Pass Level or Significantly Above Pass Level.

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 Assignments page of Canvas 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.

You should use a clear structure in your written report, to make it easy for markers to find where you have responded to each of the rubric criteria.

Submission

Deadline

The deadline for submission is 12:00 pm (AEST) on 25 August 2025.

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.

¹ For students completing the subject as a microcredential Certificate path, the assignment represents 100% of the available marks for the microcredential.



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 education@actuaries.asn.au in advance of the deadline and apply for special consideration.

File format

The submitted answer is to be a single WORD document. The naming convention for files is:

SUBJECT 2025 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.

Complete the questions on the coversheet and ensure you are complying with the statements.

Word limit

The assignment has a specific **word** limit of 3000 words, including all words used in tables.

Markers may not read or mark any part of your answer that exceeds this limit. Keep your **word** count within that limit. The **word** count does not include:

- cover page;
- 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 usually not 'best'.

Video

As part of this assignment, you are required to record a video presentation. Advice about how to record an effective video is provided in Appendix. You should submit your video by following these steps:

- create a video recording using the naming convention 'ALM 2025 S2 Assignment member ID';
- use your video recording to create an 'unlisted' YouTube video (see instructions in the Appendix)²; and
- insert your YouTube video URL as a hyperlink in your assignment Word file.

² The Appendix also provides advice for students who do not have access to YouTube due to their location.



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 (including AI 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 penalty may be applied, and/or 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

Late submissions

Penalties will be applied to late submissions without prior approval.

If you submit an assessment after the due date and time (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: 20% x maximum mark available (i.e. deduct 4 marks if a 20 mark assignment, deduct 10 marks if a 50 mark assignment);
- more than 24 hours (1 day) late: 100% x maximum mark available (i.e. assessment score = 0).

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. NOT submitted as a WORD document). However, you may be required to resubmit your work with the correct file format, particularly relevant to modelling or coding assignments.

If a submission does not include the correct identifier (member ID) in the file name, 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 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 an actuary advising the board of a U.S.-based defined benefit retirement fund, which has a policy of:

- allocating 40% of its strategic asset allocation to government bonds issued by the Treasury of the United States of America, partly because it is the largest and most liquid government bond market in the world; and
- using a weighted average of the yield on the 10-year and 30-year US Treasury bonds to derive the discount rate used to value its liabilities.

You have been asked by the board to provide a report explaining some aspects that are relevant to US Treasury Bonds and their yields, and to make a proposal for an investment decision relating to the board's investment in US Treasury bonds.

Available information

You should search for information that is relevant to the US Treasury bond market and to the questions set out below. Please cite references for any material that you use.



Assignment Questions (Total 20 Marks)

Prepare a report in a suitable format for the board that addresses the questions in Parts A, B, and C, and a short video addressing Part D.

The overall quality of your written report is being assessed

(10%)

Part A: Background briefing

1.
 - a. **Explain** the purpose and functioning of both the primary and secondary markets for US Treasury bonds and their role in how yields are determined across maturities ranging from 2 years to 30 years.
(10%)
 - b. **Explain** the main categories of market participants in the market for US Treasury bonds, how these categories have changed over the last twenty years and the most likely three top categories of participants in the next five years. Your analysis should focus on general trends and participant behaviour rather than specific yield data.
(10%)
 - c. **Explain** the four factors most likely to affect returns and risks of US Treasury bonds of various maturities over the next five years, giving consideration to economic, political or geopolitical factors, including liquidity considerations.
(15%)
2. **Analyse** the components of the expected returns on US Treasury bonds with maturities of (a) 10 years and (b) 30 years over the next 5 years, in each case giving consideration to factors such as inflation, term premium, liquidity premium, uncertainty and risk-related premiums and market participants' required risk-free rates of return.
(15%)

Part B: Examples of market pricing and investment strategy.

The board is currently considering a recommendation from its investment managers to purchase 10-year US Treasury bonds to match a specific liability payment due in exactly 10 years. The fund's actuarial team has calculated that the present value of this liability is \$50 million when discounted at the current 10-year Treasury bond yield.



Given information:

- Current date: June 15, 2025
- 10-year Treasury bond available: 4.25% p.a. coupon, maturing March 15, 2035
- Current 10-year Treasury bond yield: 4.50% p.a.
- The bond pays semi-annual coupons
- Face value: \$100

The board is concerned about interest rate risk and is considering two strategies: (A) Buy the 10-year Treasury bond now or (B) Wait 6 months and reassess market conditions.

3. **Calculate**, showing all steps in your calculations:

- a. the current market price of the 10-year Treasury bond.
- b. if Treasury bond yields increase by 0.50% across all maturities within the next 6 months:
 - i. the new price of the bond;
 - ii. the capital loss/gain from the original purchase price expressed as a percentage of the original purchase price.

(10%)

Part C: Analysis and recommendation

4. Given your calculations and the board's policy, **propose** a recommendation on the timing of the bond purchase i.e. which of the two strategies (A or B) should be adopted. In your analysis, consider:

- The relationship between bond pricing and yield changes
- How this relates to the fund's liability valuation
- The trade-off between interest rate risk and reinvestment risk
- Any assumptions you are making about market conditions

Show all workings and state any assumptions clearly.

(20%)

Part D: Summary

5. Prepare and record a 2-minute video presentation synthesising your proposed recommendation from Q4.

(10%)

END OF ASSIGNMENT