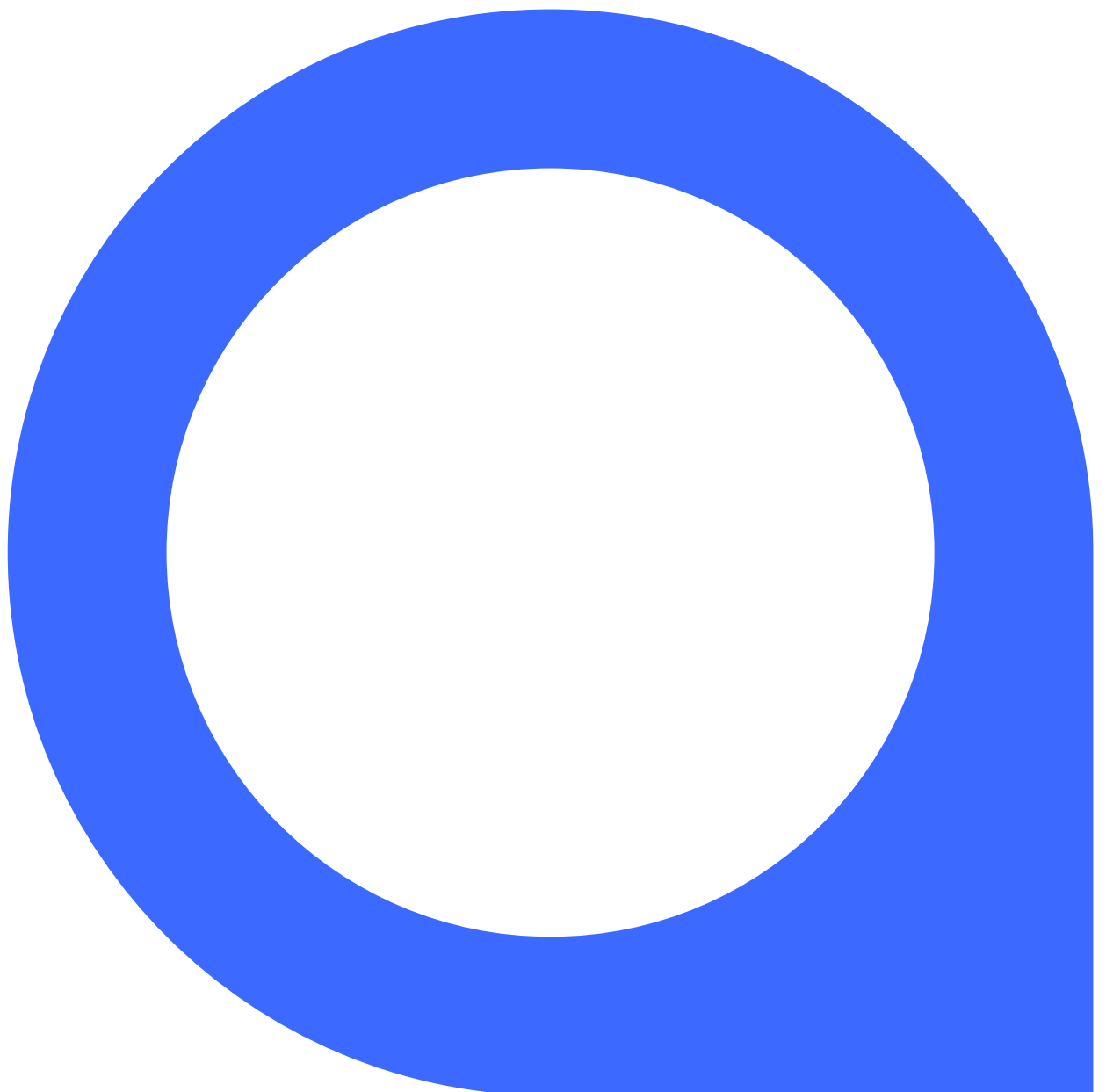


Asset Liability Management

Exam Semester 2 2024





Subject Title: Asset Liability Management

Date: Friday 11 October 2024

Time: 15 minutes
(Planning Time)

3 hours
(Examination)

Instructions:

You will have 3 hours and 15 minutes to complete your examination with an additional 10 minutes for submission.

You may commence typing during the planning time and remember to save your work regularly.

Type your answers using Microsoft Word and ensure that there are no links to spreadsheets.

Candidates are required to answer all questions.

Include your member ID in the header and footer on each page of the Microsoft Word document.

| Question | Marks |
|----------|-------|
| 1 | 18 |
| 2 | 24 |
| 3 | 24 |
| 4 | 14 |
| Total | 80 |

This paper has **SEVEN** (7) pages including the title page.



QUESTION 1

(18 Marks)

An investor is considering three specific investments with a view to choosing one to add to their portfolio.

- Direct ownership of an industrial property (site and buildings) suitable for a manufacturing tenant. The investor will own 100% of the property.
- Private equity investment into a company that is proposing to manufacture military drones on a commercial scale. The investor will own 33% of the shares in the company, the two entrepreneurs who started up the company will own the other 67%.
- An investment into an unlisted infrastructure fund, managed by a professional infrastructure manager, expecting to hold around 25% of the units in the fund with another three co-investors each holding around 25%. The unlisted infrastructure fund owns seven assets in three countries.

a. State the counterparty risks arising for each of these three investments. (6 Marks)

b. Discuss the characteristics of the **industrial property** that will drive the risk and return from this investment, noting you do not need to discuss taxation. [Hint: Use System T] (6 Marks)

c. Evaluate the Financial Ratio Analysis and Dividend Discount Model approaches to equity for possible use with this **private equity** investment. (6 Marks)

END OF QUESTION 1



QUESTION 2

(24 Marks)

A mother aged 85 is setting up a trust for herself and one for her son aged 45. Each trust will commence with a 1/2 share of her current investment portfolio. The trust has taxation benefits while in operation provided drawdowns are allocated to living expenses and any residual is donated to charity on death. This arrangement motivates the beneficiaries to keep the capital invested within the trust while they are alive.

Mother: Will draw \$0.5million per annum for living expenses, indexed. On death the balance will be donated to charity.

Son: Cannot draw from the trust until age 65. From age 65 the son may select the drawdown rate required to meet living expenses. On death the balance will be donated to charity.

The mother has no other source of income. The son is currently employed.

The investment portfolio is \$30 million. It is currently invested as:

- 50% long term government bonds;
- 5% across the 5 largest listed companies; and
- the remaining 45% in three large office blocks in one city.

All assets are domestic.

You have been retained by the mother to restructure the asset allocation of each trust to best align with the beneficiary and their time frame.

- a) Compare expected long term returns across the three asset types in the current portfolio

(6 Marks)

- b) Assess each of the three asset types for suitability for the son's investment trust

(6 Marks)

- c) Explain how actuarial techniques can be used to determine a suitable strategic asset allocation for the son's investment trust

(4 Marks)

- d) Explain why the investment strategy should change over time for the son's trust

(2 Marks)



The mother is considering selling the current assets, investing instead via investment trusts and employing an investment advisor to help her select the fund managers and asset classes.

- e) Explain three types of regulation that exist to protect the mother and son in this situation

(6 Marks)

END OF QUESTION 2



QUESTION 3

(24 Marks)

A University has received a \$2 billion donation from a successful graduate. The money has been placed into a Trust and will be used for a 4 year capital works project for a new building. The project is budgeted as \$500 million per annum for four years, plus an allowance for inflation. If the value of the Trust falls to zero during the four years, the capital works project must stop immediately even if building is incomplete. This would be very poor outcome for the University and the donor. Any surplus at the end of the four years will be reassigned for another project.

You are setting up the investment strategy for the Trust. The University has authorised listed equities; government bonds and corporate debt securities. You have suggested incorporating derivatives.

- a) **Explain** the asset/liability matching requirements of the University (4 Marks)
- b) **Compare** the features of exchange traded derivatives with over-the-counter derivatives, for use by the University (4 Marks)
- c) **Describe** the valuation approach to determine a fair value for the corporate debt securities for the Trust's annual financial statements (Your answer should identify the key assumptions) (4 Marks)

During the first 12 months of the project, inflation is expected to remain steady at 3%pa and the central bank is expected to reduce its cash rates from 6%pa to 4%pa.

- d) **Explain** the likely direction of the impact on the valuations of (i) listed equities and (ii) corporate debt (4 Marks)
- e) **Examine** the three proposed asset types for suitability for the investment portfolio, applying the principles of asset liability management (6 Marks)
- f) **Identify** a potential benefit and a potential drawback of employing derivatives within the portfolio (2 marks)

END OF QUESTION 3



QUESTION 4

(14 Marks)

You are providing actuarial advice to a life insurance company in respect to their annuity product portfolio. The annuity product is increasing in sales and the liabilities are growing. Annuities have been priced using 30 year government bond rates at the date of purchase, while the investment portfolio has to date been entirely in cash and diversified fixed interest, with the company absorbing any mismatch losses out of shareholder capital.

The life insurer is reviewing the pricing basis for the annuity product and the investment strategy for the portfolio. The plan is to have a much closer match between the valuation of assets and the valuation of liabilities.

You are providing advice in respect to a range of specific questions.

- a) **Discuss** why expected returns from a diversified fixed interest portfolio are not the same as expected returns from 30 year government bonds (4 Marks)
- b) **Consider** the relevance of behavioural finance theory to
 - i. Government bond pricing (2 Marks)
 - ii. Listed equity pricing (2 Marks)
 - iii. Demand for annuities (2 Marks)
- c) **Explain** one way to improve the matching of the assets to the liabilities (4 Marks)

END OF QUESTION 4

END OF EXAMINATION