

ASSET AND LIABILITY MANAGEMENT

EXAM SEMESTER 1 2021



Subject Title: Asset and Liability Management

Date: Thursday, 15 April 2021

Time: 15 minutes
(Planning Time)

3 hours
(Examination)

Instructions:

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

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

Type your answers to the questions using Microsoft Word and ensure that there are no links to spreadsheets. You may use Microsoft Excel to prepare and submit your answer for Question 1(a) only.

In your answers, include your candidate number in the header and footer on each page of the document.

Candidates are required to answer all questions.

Question	Mark
1	11
2	16
3	14
4	25
5	14
Total	80

This paper has **NINE** (9) pages (including the title page).



QUESTION 1

(11 Marks)

An investor has an actively managed debt portfolio. The investor's mandate specifies:

- 50% domestic government debt securities and 50% domestic investment grade corporate debt securities;
- duration targets for each type of debt; and
- the minimum credit rating for individual securities.

A manager offers a debt securities fund (DS Fund) that the investor is considering. The DS Fund is benchmarked against a broad market weighted debt index comprising all issued domestic denominated investment grade bonds (government and corporate). The DS Fund targets outperforming this index by 0.5% p.a. before fees (that is, the total return to the investor).

The manager charges a fee of 0.2% p.a. plus a performance fee of 10% of gross returns in excess of (Index + 0.5%) (the minimum performance fee is 0%). The performance fee is assessed annually in arrears.

- a) The investor wishes to understand how the DS Fund fee structure will work in practice. Complete the table of net returns to the investor (as a % pa) assuming the investor has a 0% income tax rate. The table is provided in the accompanying spreadsheet.

Note: the accompanying spreadsheet is titled: "ALM_Sem_1_2021_Exam_Q1(a)_Answer Template.xlsx"

(2 marks)

- b) Summarise your understanding of the investor's mandate and the DS Fund benchmark portfolio.

(2 marks)

- c) State four distinct ways the composition of the DS Fund may differ from the investor's debt portfolio mandate.

(4 marks)

- d) Identify one potential problem arising here for the investor if they use the DS Fund for their debt portfolio.

(1 mark)

- e) Suggest two alternative actions to resolve the potential problem identified in (d).

(2 marks)

END OF QUESTION 1



QUESTION 2

(16 Marks)

You are an actuary at a life insurance company. The board is responsible for the investment of the assets supporting the life insurance business. The board's investment beliefs are:

- Assess investment risks and returns relative to the insurance liabilities;
- Minimise unrewarded risks;
- Capital markets are fairly efficient over time; and
- Responsible investment adds value.

Responsible investment refers to social, environmental and governance factors.

The board is reviewing its domestic equity managers. Some board members are investment novices and have asked you to assist them as they prepare for the equity manager interviews.

Note: There is no accompanying spreadsheet for this question.

a) Prepare a short answer to each question below:

- Describe active and passive management styles (for an equity portfolio).
(4 marks)
- Compare technical analysis and fundamental analysis.
(4 marks)
- Discuss the relevance of the Efficient Market Hypothesis to selecting the most appropriate management style.
(4 marks)

b) Given the board's stated beliefs:

- Discuss how past performance of the individual managers should be taken into account by the Board when selecting a manager.
(2 marks)
- Propose two specific questions for the board members to ask each and every equity manager that will assist in selecting a manager aligned to the board's investment beliefs.
(2 marks)

END OF QUESTION 2



QUESTION 3

(14 Marks)

A large global charity provides long term care to otherwise homeless elderly whilst at the same time the charity seeks to have minimal impact on the environment.

The charity has a global investment portfolio of \$500 million. It has a stated preference to use only the income generated for its charitable purposes and not draw down on the capital.

The charity pays no tax.

Note: There is no accompanying spreadsheet for this question.

- a) Propose two investment objectives, one for risk and one for return, for the charity's investment portfolio. (3 marks)
- b) Summarise four key features of corporate debt as an investment (in general). (4 marks)
- c) Explain the relationship between the expected returns of corporate debt, government debt and cash over the long term. (2 marks)
- d) Assess whether corporate debt might be considered a suitable asset class for the charity. (3 marks)

Following a review of the current investment portfolio, it has been decided that a small proportion of the portfolio should be invested in corporate debt. A specialist investment manager has therefore been appointed.

- e) State four matters that should be included in the explicit written mandate between the trustees of the charity and the investment manager. (2 marks)

END OF QUESTION 3



QUESTION 4

(25 Marks)

An investment company manages a mortgage trust RESIFUND which has a market value of AUD\$800 million. The RESIFUND trust pools investor money and lends money (issues a mortgage) to developers for land subdivision projects and/or residential property developments. All properties are in the local jurisdiction and all mortgages in the domestic currency. It is an open fund, that is, able to accept new investors at any time and no fixed close date.

The marketing material to investors states:

- Your investment is diversified across a range of mortgages.
- In return for investing, investors receive a regular income called a distribution, generated from the interest paid by borrowers, interest earned on cash and earnings from other underlying investments held by the trust.
- Income from the pool of mortgages is distributed to all investors equally based on unit holdings.
- Investors share the risk associated with each of the mortgages in the pool.
- You can withdraw some or all of your capital subject to the trust's liquidity (a notice period is usually required).
- Distributions are paid monthly in arrears – investors may elect to reinvest distributions into the trust.

Most investors are self-funded retirees and they typically take the monthly distributions as cash, that is, they do not reinvest.

When an investor sells units (withdraws), payment to the investor is normally made on the fifth business day after receipt of the request to withdraw. However, in extreme circumstances, the investment company can defer withdrawal payments from the unit trust by up to six months.

Note: There is no accompanying spreadsheet for this question.

- a) Describe one circumstance when it might be necessary to defer payments in this way. (2 marks)
- b) Discuss the following aspects of the unit trust's investment strategy:
- i. Ways RESIFUND can diversify the mortgage assets it holds. (2 marks)
 - ii. The proportion of the portfolio that should be held in cash (2 marks)

A change in the regulations governing unit trusts has been proposed. The new regulations will specify that withdrawal payments must be made within 30 days or the investment company managing the unit trust will lose its license to operate.



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c) State one action that the investment company could take to ensure the 30-day limit can be met in most situations. (1 mark)

d) State the impact that the action could have on the investment performance of this unit trust. (1 mark)

A single self-funded retiree aged 70 manages their own investment portfolio of \$2 million, to generate an income of \$50,000 per annum (indexed) in retirement. The retiree has no beneficiaries and no need to leave an estate on death.

e) Propose one return and one risk investment objective for their portfolio. (2 marks)

f) There are three possible investments for the self-funded retiree.

- Term deposits;
- RESIFUND; and
- Stock market top 20 stocks by capitalisation.

Compare and contrast these investments for the retiree, considering the four key features given below. Present your answer in a table format.

	Term Deposits	RESIFUND	Top 20 stocks
Security of capital			
Yield			
Term			
Marketability			

(12 marks)

g) Propose an asset allocation for the retiree's portfolio for the next 5 years, using **only the three** investments in part (f). State any assumptions you make. (3 marks)

END OF QUESTION 4



QUESTION 5

(14 Marks)

This information is published by the Perth Mint each day. (All prices are per ounce of the relevant commodity.)

Perth Mint Spot Prices

Spot Price Australian Dollars		
	Ask	Bid
Gold	\$2,423.82	\$2,411.98
Silver	\$35.85	\$35.36
Platinum	\$1,471.95	\$1,420.55

Note: There is no accompanying spreadsheet for this question.

a) For each term below, explain the term and give an example by using the information given above:

- i. Market Maker
- ii. Ask Price
- iii. Bid Price
- iv. Spread

(4 marks)

A jeweler is forecasting their precious metal purchases for the next financial year to plan their budget. They expect to need 25 ounces of gold per quarter for the bespoke jewelry they will make each quarter.

To assist with budgeting, they prefer to purchase their 3-monthly requirements on the first day of each quarter (1 July, 1 October, 1 January and 1 April) and lock in the price for all four purchases the preceding April whilst preparing the budget.

b) State four types of derivatives and advise whether each is suitable for this approach.

(4 marks)

The jeweler decides to buy 4 forward contracts in April, one for each quarter, each for 25 ounces at \$2,400 per ounce (the forward price is the same for all contracts).

c) Write down the general long forward pay off formula, defining all terms.

(2 marks)



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d) If the spot prices eventuate as follows, determine the nominal payoff for the jeweler over the full year (ignore transactional costs and do not discount cashflows). Show your workings.

- o 1 July 2021 \$2,500
- o 1 October 2021 \$2,600
- o 1 January 2022 \$2,200
- o 1 April 2022 \$2,400

(2 marks)

e) Give an example of a party who might be prepared to enter into the forward contracts with the jeweler, stating why.

(2 marks)

END OF QUESTION 5

END OF EXAMINATION