

# ASSET AND LIABILITY MANAGEMENT

EXAM SEMESTER 2 2020



# Asset and Liability Management

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**Subject Title:** Asset and Liability Management

**Date:** Thursday, 1 October 2020

**Time:** 15 minutes  
(Planning Time)

3 hours and 30 minutes  
(Examination Time)

**Instructions:**

You will have 3 hours and 45 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 using Microsoft Word and ensure that there are no links to spreadsheets.

Candidates are required to answer all questions.

Include your candidate number in the header and footer on each page of the Microsoft Word document.

**Note:** There are no accompanying spreadsheets for this exam.

Question	Mark
1	14
2	24
3	12
4	14
5	16
<b>Total</b>	<b>80</b>

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



### QUESTION 1

(14 Marks)

The table below shows the changes in market prices for five stocks over one period and the opening and closing indices for three types of index:

- a market capitalisation index,
- a price index, where the divisor is 0.8, and
- an equal-weighting index.

Stock	Price		Number of Shares
	t = 0	t = 1	
A	1	12	10
B	2	2	20
C	3	6	30
D	4	7	40
E	5	8	50
Market Cap	1.00		
Price	18.75		
Equal Weight	5.00		

- a) **Calculate** the closing index and return over the year for each index. Show your workings in a table. [If you use excel then paste your results into your word document]. (6 marks)
- b) **Explain** why the equal weight index significantly has outperformed the others. Your answer should include one statement on each of the three indices. (2 marks)

A superannuation fund trustee wishes to benchmark their equity performance against a single index.

- c) **Propose** one of these three types of indices to be their benchmark, with reasons. (3 marks)

A fund manager offers an investment product to the trustee that promises equity performance higher than the TOP200, the local Stock Exchange index tracking the largest 200 stocks by market capitalisation. The prospectus states that the two aims of the investment product are to beat the index by 0.5% per annum and to maximise return.

- d)
- State** one investment belief the fund manager might hold about investment market behaviour. (1 mark)
  - Outline** one strategy available to the manager to achieve their stated objectives. (2 marks)

END OF QUESTION 1



### QUESTION 2

(24 Marks)

A trustee manages a trust set up by a grandmother. It pays an annual income to each of her ten grandchildren until the youngest (now 8) reaches 18. At that time, all assets will be sold and the proceeds distributed equally between the ten grandchildren. There is \$100 million in the trust. The trustee will withdraw \$1 million a year (indexed to CPI) for ten years to pay the income. The trustee will then windup and distribute the asset proceeds to the beneficiaries.

- a) **Propose** one return investment objective for the trust fund, with clear links to the liabilities and stating your assumptions (4 marks)
- b) **State** the five Ferris tests for objectives and **demonstrate** that your chosen return objective meets them (5 marks)

An investment advisor to the trustee has recommended a diversified investment strategy with 25% exposure to property.

- c)
- i. **Apply** SYSTEM T to **discuss** the key risk and return characteristics of property as an asset class, that are relevant to this trust fund. (7 marks)
  - ii. **Describe** the relationship between the economy and property markets. (4 marks)
  - iii. **Evaluate** the pros and cons of using one **direct** property investment for this trust fund, given the maximum property allocation of \$25 million. (4 marks)

END OF QUESTION 2



### QUESTION 3

(12 Marks)

It has been claimed that the long-term performance of professional managers of equity portfolios is likely to be mediocre (that is, at or below the relevant equity index) because the equity market is semi-strong form efficient - according to Modern Portfolio Theory.

a) **Define** semi-strong form efficient. (1 mark)

b) **Discuss** two other possible explanations for investment performance by professional investors being below the relevant index, which would be true whether or not the equity market is semi-strong form efficient (4 marks)

In addition to Modern Portfolio Theory, there are three other theories of investment market behaviour covered in the course.

c) **Assess** which, if any, of these theories would support the hypothesis that active management can add value to an equity portfolio. (7 marks)

END OF QUESTION 3



### QUESTION 4

(14 Marks)

Consider a retirement fund where members typically join at 25, contribute to the fund while working, retire at 65, then draw a regular income from the fund until death. Member turnover is very low. The trustee invests every member's account into a common investment portfolio.

The trustee is reviewing its Investment Strategy.

- a) Explain what a diversified portfolio is and why the trustee should use a diversified portfolio. (2 marks)

The investment portfolio selected by the trustee of the retirement fund is shown below:

Asset class	Weighting
Domestic ordinary shares	30%
Domestic listed property	20%
Domestic corporate floating-rate notes (rated AA through to BB)	15%
Domestic fixed-coupon government bonds maintaining a duration of ten years (rated AAA)	25%
Cash at call with banks	10%

The trustee is considering adding an international equity allocation of 15% by reducing the domestic equity allocation to 15%.

- b) State the arguments in favour of adding international assets to this diversified portfolio. (2 marks)
- c) Identify two ways the trustee may employ derivatives to manage the portfolio assuming the trustee adds an international equity allocation. (2 marks)

The trustee is required to provide investment risk return profile information to members, at the time they join the fund. You are assisting the trustee with their member information documents.

Assume monetary policy has inflation target of 1.5% per annum, expected real GDP growth is 0.5% per annum. Current cash rates are 1.0% per annum and inflation over last year was 0.0%. Ignore taxation, administration and investment expenses. You may apply your own knowledge and judgement to set any additional assumptions required.

- d) Recommend the long term (10 years) rate of return to assume for each of the five asset classes in the table above, giving your reasons. (6 marks)
- e) List additional comments on investment risks you would include in any member communications where this long term (10 years) return assumption is used. (2 marks)

END OF QUESTION 4



### QUESTION 5

(16 Marks)

Consider a listed life insurance company that only sells yearly renewable term insurance, is currently operating with appropriate reserves and has been consistently paying dividends to shareholders.

- a) **Propose** the primary objective of the life insurance company. (1 mark)
- b) **Identify** any 2 factors relevant to the life insurance company that will influence their investment strategy and explain why. (4 marks)

The company is considering expanding by acquiring an existing book of life annuities (and supporting assets). The supporting assets consist of cash and a portfolio of index linked government bonds of varying terms, out to 30 years.

- c) **Explain** why this is an appropriate investment strategy for the life annuity assets. (4 marks)

Assuming the company will offer both term life and annuities going forward, the Chief Risk Officer requests asset/liability modelling be carried out to fully understand the relationship between assets and liabilities and assess the risk of the assets being insufficient to fund the liabilities.

- d) **List** the steps to carry out this asset/liability modelling project including the steps to demonstrate the impact of experience varying from the base assumptions. (7 marks)

**END OF QUESTION 5**

**END OF EXAMINATION**