

ASSET LIABILITY MANAGEMENT

EXAM SEMESTER 1 2022



Subject Title: Asset Liability Management

Date: Thursday, 14th April 2022

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

Question	Marks
1	18
2	22
3	19
4	21
Total	80

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



QUESTION 1

(18 marks)

A life insurance company has an asset portfolio which has an allocation to global listed equities managed by external investment managers. The Board's investment beliefs are:

- the investment strategy should minimise unrewarded risks in the asset portfolio;
- capital markets are fairly efficient over time; and
- adopting environmental social and governance (ESG) risk factors in the investment strategy is likely to add to returns over time.

The Board has asked you to assist it as it prepares to review the current and potential global equity managers.

a) Prepare a short answer to each question below:

- i. Distinguish between active and passive management styles for an equity portfolio. (4 marks)
- ii. Explain technical analysis and fundamental analysis as they apply to active management of an equity portfolio. (4 marks)

b) Given the board's stated beliefs,

- i. Explain the relevance of the Efficient Market Hypothesis when selecting the most appropriate management style having regard to the Board's stated beliefs. (4 marks)
- ii. Explain how past performance of the investment managers should be taken into account by the Board when selecting an investment manager. (4 marks)
- iii. Propose two specific questions for the Board members to ask each active global equity manager that will assist in selecting managers aligned to the board's investment beliefs. (2 marks)

END OF QUESTION 1



QUESTION 2

(22 marks)

The Trustee Board of a defined-contribution superannuation fund intends to carry out asset liability modelling to test investment strategies.

There are no guarantees of investment return on members' accounts.

If the fund fails an annual performance test (APT) in two consecutive years, then they cannot receive contributions from existing or new members. A fund fails the APT if the net return on members' accounts is more than 0.5% p.a. below a benchmark return set in advance by the Trustee Board.

All superannuation funds are required to offer a Retirement Income Plan (RIP) to their retiree members. The RIP must provide an income payment each year from a member's account that is at least 4% per annum of the member's account balance at the time of retirement. There is no guarantee that the member's account will not reach zero before death.

Members may choose:

- their retirement age from which the Retirement Income Plan starts, provided that it is at least 60 years;
- at any time after their Retirement Income Plan (RIP) has commenced, to transfer their entire RIP to another superannuation fund;
- at any time after age 80, to withdraw up to 50% of their account balance (for example, to fund expenditures such as aged care)

a)

- i. Describe three broad types of asset liability matching which may be applied to the fund. **(3 marks)**
- ii. Select one of the three broad types of asset liability matching which is most applicable to the fund. **(1 mark)**
- iii. Explain how the fund's liabilities may affect the investment strategy of the fund. **(4 marks)**
- iv. Propose an investment risk objective and an investment return objective for the fund with reference to the assets supporting the RIP. **(4 marks)**

b) In relation to the model used to test the investment strategies for this fund:

- i. Describe the advantages and disadvantages of using a deterministic model compared with a stochastic model. **(4 marks)**
- ii. List six key assumptions required to model the fund's future cash flows. **(3 marks)**

c) Assess the implications of the Annual Performance Tests on the investment strategy of the fund, having regard to the members' financial interests and the interests of the Board and management of the Fund. **(3 marks)**

END OF QUESTION 2



QUESTION 3

(19 marks)

A Foundation has been set up to provide money for public health programs that help contain the spread of new diseases which could overwhelm the healthcare systems of wealthy countries as well as disrupt their economies. This aspect was instrumental in raising \$10 billion for the Foundation from donations by wealthy individuals and major corporations in wealthy countries. Fund raising from donors is expected to continue each year and be at least \$1 billion per annum.

It is expected that each year there will be up to 20 new programs starting and that the funding for each would cost up to \$50 million per annum, increasing in line with health care inflation, which is expected to be of the order of CPI plus 5% per annum.

Money not spent yet on programs is invested in a fund. The aim is to use the income and realised gains of the fund together with a proportion of the ongoing donations to fund the programs while maintaining purchasing power of the Fund in line with health care inflation.

The Fund:

- may invest in equities listed on any major global exchange, fixed interest issued by sovereign governments and corporates which have investment grade credit ratings, and cash
- may not borrow
- pays no tax on income or capital gains

a)

- i. Explain the liabilities that are being funded. (5 marks)
- ii. Identify 5 components of an investment policy for the Fund which the Board should adopt. (5 marks)

b) Propose, with your reasoning, two investment objectives, one for risk and one for return, for the Fund's investment portfolio. (4 marks)

c) State 5 matters that should be included in the explicit written mandate between the Fund and the investment manager of a listed equities portfolio that is being managed as part of the fund. (5 marks)

END OF QUESTION 3



QUESTION 4

(21 marks)

A defined benefit pension fund provides retirement benefits for teachers. The retirement pensions are adjusted annually by the greater of the rate of inflation in the Teachers' Benchmark Salary (TBS) or zero. The Fund has a substantial surplus of assets over liabilities.

The Fund has the following investment objective:

- 1) achieving a return equal to the rate of inflation in the TBS plus 2% per annum after allowing for investment management cost over rolling 10-year periods.
- 2) the net return on the fund has an 80% probability of exceeding the rate of inflation in the TBS over rolling 10-year periods.

One asset in the Fund's investment portfolio is a 40% holding in an unlisted infrastructure company, Global Toll Roads (GTR).

The assets of GTR are long term operating leases from the local, state, or central governments, in a number of countries, which allow GTR to operate the toll roads for terms between 50 and 100 years.

The terms of the leases allow GTR to collect tolls, which may be increased in line with inflation, subject to certain rights of review by the lessors (the governments).

GTR has:

- its domicile in the same country as the Fund;
- been profitable since it was established;
- a policy of paying 66% of its net profit as dividends;
- a dividend yield that has averaged around 4% p.a. of the fair value of the shares for over 10 years
- dividends growth of 5% p.a. over 10 years versus inflation that has averaged less than 3 % p.a.
- operating leverage that assists growth of the profits and dividends relative to the rate of inflation
- a modest level of financial leverage with debt to gross assets being 30%.
- retains the balance of its profits to finance maintenance of the toll roads and growth of the business.

a) Analyse the 40% share of GTR as an asset of the Fund using the SYSTEM T tool. (7 marks)

b) Explain two characteristics of unlisted assets which lead to risks that need to be managed or mitigated. (2 marks)

c) Explain why this asset is suitable for the Fund having regard to the Fund's liabilities, its investment objective, and its current surplus position. (4 marks)

d) Describe the uncertainties that need to be addressed in the valuation of this asset. (4 marks)



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- e) Propose, with reasons and examples, two other types of asset that may be suitable for the Fund having regard to the Fund's liabilities its investment objective and its current surplus position. **(4 marks)**

END OF QUESTION 4

END OF EXAMINATION