THE INSTITUTE OF ACTUARIES OF AUSTRALIA

INVESTMENT MANAGEMENT **2002 EXAMINATIONS**
PAPER ONE

Answer all 6 questions.

QUESTION 1 **(8 marks)**

(a) In the past, many have put forward the notion that equities provide a suitable match for inflation-linked liabilities. Discuss why this may not be the case.

(3 marks)

(b) As an analyst working for a major international broking house, you are responsible for researching companies in both Australia and the United States. Early on in your research you notice that the price-earnings ratios applying to US companies are somewhat higher than those applying to Australian companies.

Provide some reasons as to why this price-earnings multiple differential might exist, even for quite similar companies.

(5 marks)

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QUESTION 2 **(21 marks)**

After a successful career as an investment actuary for a major fund manager, you recently decided to enter financial planning. Andrew (30) and Jean (28) have formally engaged you to provide financial advice. You note the following:

- They are planning to marry in June 2003 at a cost of $15,000.
- Each has saved $90,000 in a high interest Internet easy saver account (total of $180,000).
- Currently they can save $6,000 per month ($3,000 each) to the high interest Internet easy saver account (after rent).
- Jean has quite a stable income whilst Andrew's income fluctuates quite dramatically as he moves between contracts.
- They are both high income earners on the top marginal tax rate and each year incur a hefty tax bill. Hence they are keen on any strategies you can suggest to improve their tax position.
- Andrew is an aggressive investor, in particular:
    - He recently lost $50,000 in an agricultural tax scheme; and
    - He has a $40,000 margin loan that regularly experiences calls as he seems to consistently buy stocks that fall in value. In particular he suffered quite a loss on the recent fall in health/biotech and telecommunication stocks. Currently his portfolio is valued at $80,000 so he has a $40,000 net position.
- Over the last six months they have been looking to jointly purchase a property to 'call home' in Sydney for around $600,000. The property market seems overheated so they are finding it challenging to decide on a good entry point.
- Both are prepared to take managed risks to get ahead in life.

They have been holding most of their resources in cash in anticipation of shortly buying a property, but now the property purchase could be three to twelve months or even further away.

Andrew and Jean would like your advice on how they could better manage their financial affairs. In particular they would like to consider gearing into local and international shares. They are interested in how you as an actuary might approach their circumstances.

(a) What issues would you identify as the most important in formulating a financial plan for Andrew and Jean? Include in your answer a discussion of how investment strategies will be influenced by each issue. (4 marks)

(b) What further information would you seek with respect to their future plans? (2 marks)

(c) You decide to build a relatively simple deterministic financial model for Andrew and Jean. Fill in the following table with the assumptions you would make in respect of:

- The likely income yields (separately identifying assumptions for imputation credits); and
- A reasonable range of capital growth outcomes (both a maximum gain and a maximum loss) to include in your modelling of potential outcomes.

Asset Class	Income Yield	Imputation Credits	Capital loss maximum	Capital gain maximum
Cash				
Property Trusts				
Large Capitalisation Australian Equity				
Small Capitalisation Australian Equity				
International shares				
Sydney Property				

What would you expect a margin loan to currently cost?

(3 marks)

(d) Calculate the deposit Andrew and Jean would have available to apply to a property purchase in six months assuming that:

- Andrew's existing share portfolio and margin loan remain in place.
- All existing cash plus the proceeds of another 50% margin loan are invested in Australian small capitalisation shares. That is, $360,000 is invested in small capitalisation shares, $180,000 funded by their current cash holdings and the remainder by the margin loan.

Two answers should be given for this investment strategy:

- One assuming that the shares experience the maximum capital growth assumption you made in part (c).
- The other assuming that the shares experience the maximum capital loss assumption you made in part (c).

Assume:

- In respect of Andrew's existing share portfolio, that it consists of Australian large capitalisation shares.
- That interest on the margin loans is paid at the end of the six month period.
- Capital value movements occur at the end of the six months, i.e. the shares do not change in value until the end of the period.
- For capital gains tax, that capital gains are not discounted as the investments are held for less than one year and that the tax benefit of capital losses can be realised immediately. Further, assume that there are no capital losses carried forward to offset future capital gains.
- Include a 1.5% Medicare levy in all tax calculations.
- Cashflows occur at the end of periods to allow ease of calculation.

Clearly set out all working.

(12 marks)

QUESTION 3 **(12 marks)**

You work for a large Australian based funds management company. The company employs an active investment approach to its fixed income investments.

Recently you have come under criticism from asset consultants for your inability to add value from your active approach.

(a) What arguments would you put forward in favour of continuing with an active approach? Which areas of active value added do you perceive as being the most likely to produce results in the future?

(5 marks)

(b) As part of an internal review of the company's approach to managing its fixed-income investments across both government and corporate exposures, the company is considering using a global fixed-income benchmark (and broadening its range of permissible assets accordingly) rather than an Australian fixed interest benchmark. What advantages does this have, and what might be the pitfalls?

(7 marks)

QUESTION 4 **(20 marks)**

You are employed in the investment division of a large Australian life insurance company. Recent share market volatility has created considerable demand for your company's capital guaranteed business. Hence you now have a $500 million portfolio of assets over which your company has offered capital guarantees.

The nature of the capital guarantee is as follows:

- The related policies offer a guarantee that at least (100 – x)% of investors' capital will be available for redemption at the end of the twelve-month period, before allowance for management fees.
- The x% amount is determined at the beginning of each year after considering advice from your department.
- If the return on the ASX 200 accumulation index (capital gain plus reinvested dividends), denoted R, is greater than zero for the year, the investor's return will be (100 - x)% times R, less x%, less an adjustment for tax and, of course, management fees.
- If the ASX200 accumulation index return is below zero, then (100-x)% of the investor's capital, less management fees, is returned.

The investment mandate allows you to invest across a wide range of asset allocation bands, and to use derivatives.

Your manager is considering the various options for managing this portfolio, and seeks out your advice.

(a) One of the options for managing this exposure is to use derivatives. What are the key risks that the life office is exposed to if it uses derivatives? (2 marks)

(b) An investment bank has offered to assist the life office by selling put options over the relevant index. Your manager is sceptical:

"I know that those investment banking clowns will pad their derivative pricing with all sorts of margins – why should we pay away this margin! Let's replicate the delta hedging strategy ourselves on a daily basis."

What are the key disadvantages of this delta hedging strategy, as compared to using derivatives? (6 marks)

(c) After due consideration, your manager decides to go down the derivatives route. The next choice to be made is whether you should either:

- Purchase a call option and invest the remainder of the portfolio in cash; or
- Purchase physical shares and a put option over this portfolio.

(i) Describe how each of these strategies could be implemented.

(ii) What are the pros and cons of each approach? (12 marks)

QUESTION 5 **(19 marks)**

You have recently joined This Is Superannuation Management, an Australian equities funds manager with a fundamental analysis orientation.

One of your first tasks is to recommend an investment in the retailing sector. Your boss has considered the available stocks and limited your choice to one of two companies. Summary profit and loss statements and balance sheets for each company are set out below. All numbers are in AUD millions unless otherwise stated.

Company A					
Calendar year	**1998**	**1999**	**2000**	**2001**	**2002**
Revenue	1,000	1,100	1,210	1,331	1,464
Operating Expenses	(600)	(660)	(726)	(799)	(878)
EBITDA	400	440	484	532	586
Interest payable	(150)	(150)	(150)	(150)	(150)
Depreciation	(100)	(100)	(100)	(100)	(100)
NPBT	150	190	234	282	336
Tax	(45)	(57)	(70)	(85)	(101)
NPAT	105	133	164	198	235
No of issued shares (million)	1,000	1,000	1,000	1,000	1,000
Share price ($)	$1.58	$2.13	$2.78	$3.56	$4.46
Dividends per share paid ($)	$0.03	$0.04	$0.05	$0.06	$0.07
Assets	3,360	3,434	3,527	3,641	3,780
Liabilities					
Senior Debt	2,000	2,000	2,000	2,000	2,000
Other liabilities	100	100	100	100	100
Equity	1,260	1,334	1,427	1,541	1,680

Company B					
Calendar year	**1998**	**1999**	**2000**	**2001**	**2002**
Revenue	400	480	576	691	829
Operating Expenses	(340)	(408)	(490)	(588)	(705)
EBITDA	60	72	86	104	124
Interest payable	(15)	(15)	(15)	(15)	(15)
Depreciation	(5)	(5)	(5)	(5)	(5)
NPBT	40	52	66	84	104
Tax	(12)	(16)	(20)	(25)	(31)
NPAT	28	36	46	59	73
No of issued shares (million)	150	150	150	150	150
Share price ($)	$1.87	$2.67	$3.72	$5.08	$6.82
Dividends per share paid ($)	$0.15	$0.19	$0.25	$ 0.31	$0.39
Assets	524	530	537	546	558
Liabilities					
Senior Debt	200	200	200	200	200
Other liabilities	100	100	100	100	100
Equity	224	230	237	246	258

(a) Based on the above information, what do you see as the primary differences between Company A and Company B? Which trends or issues would you examine more closely? Show calculations where necessary.

(6 marks)

(b) This Is Superannuation Management's Chief Strategist is firmly of the view that the economy is likely to prove difficult for retailers over the next two to three years. On this basis, which of Company A and Company B do you consider likely to offer better security of capital as an equity investment? Explain your reasoning.

(3 marks)

(c) What further information would you analyse before finalising your recommendation?

(3 marks)

(d) Like several of its contemporaries, your employer has become increasingly vocal in terms of shareholder activism. List **six** issues that you believe This Is Superannuation Management should express its views on - either publicly (e.g. via the press) or by voting their proxies at shareholder meetings - in respect of the companies that it invests in.

(3 marks)

(e) Ultimately you decide to invest in Company B, acquiring a large (10%) stake in its shares. Twelve months after taking this position a private equity investor offers to buy the entire company and take it private, i.e. its shares will no longer trade on the Australian Stock Exchange. The private equity investors are very keen on this company, and wish to take the business model overseas.

Given your large stake, they have offered you the option of either selling shares to them or retaining a 10% investment in the company via a special purpose vehicle they are setting up for this transaction. In the case where you remain invested, you still have an effective 10% shareholding with the private equity investor controlling the other 90%.

What are the issues that would impact on your decision to keep or sell your stake?

(4 marks)

QUESTION 6 **(20 marks)**

The Trustees of the Nervous Company Superannuation Fund recently heard some disturbing news emanating from an investment conference. At this conference there was a session on long-term investment returns. Several of the speakers suggested that future returns were likely to be significantly lower than those experienced in the previous two decades.

Naturally, the Trustees were very concerned to hear this. In your capacity of asset consultant to the fund, you have been asked to report back to the Trustees on this topic. Your report is to discuss some of the reasons why expected investment returns over the next decade may be lower than those experienced in the previous two, and the implications of such an expectation.

(a) Outline some reasons why future investment returns might be expected to be lower than those experienced in the 80s and 90s.

(4 marks)

(b) Your research has led you to the same conclusion regarding future investment returns (i.e. lower return expectations are reasonable). As part of your report, you decide to run revised future investment return assumptions through your firm's proprietary stochastic asset return model.

Derive, with appropriate explanation, your expected return assumptions (after tax) for cash, long term fixed interest, domestic equities and direct property for use in your firm's model.

(5 marks)

(c) How would you expect your revised inputs to affect the benchmark asset allocations suggested by the model? (2 marks)

(d) What are the practical issues involved in moving from the current benchmark asset allocation to a revised benchmark asset allocation?

(2 marks)

(e) The Fund offers investment choice to its members, including cash, capital stable, balanced and growth options. The Trustee has also asked your opinion as to what advice they should give to members regarding their level of contributions and their chosen investment options. In particular, they are interested in your thoughts on whether members should (i) maintain current contribution levels but invest more aggressively or (ii) maintain their current investment strategy but increase their contribution levels.

What considerations should be taken into account by members making such decisions? Draft your response to the Trustee in letter format.

(7 marks)

END OF PAPER ONE