Actuarial Society of South Africa

EXAMINATION

26 October 2017

Subject F205 - Investment

Fellowship Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. Candidates will be issued with instructions to log-in using a password (which you will be provided with at the exam center).

2. Candidates are required to submit their answers in Word format only using the template provided. You MAY NOT use any other computer program (e.g. Excel) during the examination.

3. Save your work continuously throughout the exam, on your computer's hard drive that you have been provided.

4. You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.

5. You must not start typing your answers until instructed to do so by the invigilator/supervisor.

6. Mark allocations are shown in brackets on exam papers.

7. Attempt all questions, beginning your answer to each question on a new page.

8. Candidates should show calculations where this is appropriate.

Note: The Actuarial Society of South Africa will not be held responsible for loss of data where candidates have not followed instructions as set out above.

AT THE END OF THE EXAMINATION

Save your answers on the hard drive.
Hand in your question paper with any additional sheets firmly attached.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

QUESTION 1

You are an independent financial advisor advising on and implementing investment strategies for high net worth South African individuals. Many of your clients have expressed concern about a forthcoming local political election, the outcome of which is extremely uncertain, and could have either a very favourable or very unfavourable impact on local capital markets.

A trader has suggested a derivative strategy that could be used by clients to benefit from this scenario and the associated market uncertainty. The strategy comprises the following trades:

Buy two “at the money” call options on ALSI 40
Sell one “in the money” call option on ALSI 40
Sell one “out of the money” call option on ALSI 40

i. a) Explain how the strategy would work using a sketch of the payoff profile.

b) Discuss the advantages and disadvantages of the strategy for your clients.

[8]

You are advising clients to increase their overseas equity exposure by using passive funds which track broad global equity indices.

ii. Outline two methods available to local individual investors to gain this exposure, including any regulatory and tax restrictions that would apply.

[8]

You are researching a range of portfolio strategies marketed as Risk Parity strategies. These have gained popularity with overseas investors over the last decade. The marketing material for one such product describes the strategy as “a quantitative based strategy which attempts to offer equity-like returns for multi-asset class portfolios whilst reducing overall volatility by limiting the exposure to equity risk”. This high return, lower risk portfolio is achieved by reducing equity exposure in favour of low volatility assets such as bonds. Leverage is then applied to the bond component in order to magnify the expected return of an otherwise lower-risk, lower-returning portfolio. Leverage is applied subject to an overall targeted volatility level for the portfolio. An allocation is also made to alternative assets, in particular commodities. The strategy is implemented by using low cost passive building blocks for the asset class exposures. The overall result, they claim, is a more diversified strategy which produces superior risk-adjusted returns.

iii. Discuss the relative merits and disadvantages of this strategy as an alternative to a multi-asset class portfolio actively managed on a Modern Portfolio Theory strategy.

[12]

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The table below shows the annual performance (gross of fees) over the last 10 years for the Risk Parity fund and for a passive portfolio comprising 60% equities and 40% bonds which is rebalanced annually.

	Risk Parity Index	Multi-asset 60:40 portfolio
2007	12%	10%
2008	-17%	-22%
2009	9%	21%
2010	12%	10%
2011	9%	-1%
2012	15%	12%
2013	0%	15%
2014	8%	4%
2015	-12%	-1%
2016	14%	4%
Annualised return for period	4.4%	4.5%

iv. Comment on the comparative performance against the backdrop of global market events for the period.

[6]

[Total 34]

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QUESTION 2

You are an independent consultant to a medium sized South African defined contribution pension fund. The fund does not offer in-fund annuities. The average age of the pension fund's members is 50 years old. The fund has been offered an opportunity to participate in a round of funding for a South African tech start-up company called Newco. Newco has developed an innovative app that promises to revolutionise the way South Africans invest their savings. The app is proving to be very popular and the number of users is increasing rapidly. Newco is ready to enter the next phase of its development.

Newco is currently 70% owned by its founder and staff, and 30% by a venture capital fund that invested in the start-up at the beginning of 2011.

You have been presented with the following financial information relating to Newco:

		2012	2013	2014	2015	2016
Revenue	R'm	-	-	15	60	250
EBITDA*	R'm	(5)	(7)	(10)	(20)	(10)
Net cash	R'm	50	43	33	13	3
Shares in Issue	(million)	100	120	144	173	207

*EBITDA is earnings before interest, tax, depreciation and amortisation

i. Analyse the financial condition of Newco.

[5]

The trustees would like to consider investing a portion of the pension fund assets in Newco.

ii. Discuss the factors that the trustees would need to consider, identifying any further information they would require before investing in Newco.

[13]

iii. Explain how one might go about determining a fair value for Newco.

[8]

The trustees have told you that the venture capital firm would like to sell its stake in Newco for R300 million. The firm invested R50 million initially, and invested a further R50 million at the end of 2012. Half of both these investments were financed with a credit facility bearing interest of 12% p.a.

iv. a) Calculate the venture capital firm's total rate of return on its investment in Newco assuming that the venture capital firm achieves its desired sales price for Newco at the end of 2017.

b) Compare this return with the returns of the SA equity market over the last 10 years.

[5]

[Total 31]

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QUESTION 3

A US portfolio manager wishes to launch a US private debt fund in the South African market and has appointed you as marketing actuary. He has asked that you prepare marketing material for potential institutional clients.

i. Explain the differences between as well as the relative advantages of investing in public debt versus private debt.

[7]

The US portfolio manager decided to structure his private debt fund as follows:

- Capital will be raised over a period of 12 to 18 months
- Investment will be in private debt
- Investment will be only in US companies
- Term of the fund will be 10 years starting after final close
- The portfolio manager will commit capital of $5million
- Intended fund size is to be $100 million. The fee structure proposed is as follows:
    - A flat fee of 1.5% p.a.
    - The first 8% of annual returns to be distributed to investors
    - Thereafter returns will be split 20/80 (portfolio manager/investor)

As the marketing actuary of the firm you have been asked to identify the risks as well as any enhancements that could be made to make the product more appealing.

ii. a) Describe the main risks for an investor and, where possible, suggest product enhancements to mitigate these risks.

b) Describe the main risks for the firm in launching this product and if possible, suggest product enhancements to mitigate these risks.

[17]

A potential investor has requested the 10 year Effective Annual Charge (EAC) of the fund. Your investigations reveal the following fees in addition to those described above:

Cost type	**% pa***
Administration cost	0.5%
Advice fee	1.5% in the first year, 0.5% thereafter
Other	3%

*please note all costs exclude VAT

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iii. Calculate the EAC assuming that full capacity is sold and an annualised return of 25% is achieved over the 10 year period.

[2]

The portfolio manager is considering implementing an alternative fee charging structure consisting of a 2% pa flat fee plus a performance fee of 20% of any outperformance above CPI + 6%. Performance fees are measured over rolling 1-year periods.

iv. a) Discuss the appropriateness of this proposed fee and the relative merits of performance fees compared with flat fees in the context of this fund.

b) Recommend how this fee structure could be amended to be more attractive to investors and the portfolio manager.

[9]

[Total 35]

[GRAND TOTAL 100]

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END OF EXAMINATION

