Actuarial Society of South Africa

EXAMINATION

September 2008

Subject SA6RSA - Investment Specialist Applications

EXAMINERS' REPORT

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable

Comments

The solutions contained in this document are more detailed than what would typically be required for a clear pass. Any relevant points made by candidates were given full marks, even if they are not contained in the solutions presented below.
Further comments are given in the solutions presented below.

Question 1

This question should not have posed difficulties for a candidate familiar with the concept of absolute return funds and the standard processes of evaluating asset managers and their products.

However, candidates must realise that absolute return funds come in many forms and adopt a wide variety of strategies to achieve their targets. Taking too narrow a definition will lead students to ignore the range of risks that need to be evaluated in considering the suitability of a particular fund and comparing it to others. And without cognisance of the potential obstacles to the fund delivering on its “promise”, candidates will not be able to suggest even the most obvious of performance and risk measures relevant to this class of product.

As always it is imperative for candidates to take note of the context that is described in the question. For instance, this question explicitly refers to a defined contribution fund, so describing fund liabilities is irrelevant; focussing on how the individual bearing the investment risk might be impacted is of the essence.

Similarly the question clearly asks about “periodic reviews” of an already appointed asset manager and refers to a past initial evaluation. The student was expected to apply her mind to the matters that might have caused a *change* in the assessment of the manager in the interim, not merely to repeat her study notes regarding an ab initio evaluation.

<u>SUGGESTED SOLUTION</u>

i)

- Trustees have very onerous responsibilities in law, particularly with regard to prudent investment of fund assets. These can only be discharged by continuous monitoring of the appropriateness and efficacy of the AM arrangements. That includes regular review of the capabilities of the asset managers on a prospective basis.
- Proper communication with members requires this monitoring too.
- It is not enough to be satisfied with the quantum of returns; it is important to understand the sources of returns and assess their sustainability.
- Even if performance is good, there may be other indicators that suggest an AM may be less effective or suitable in future.
- Good performance can result from luck
- Or from taking excessive or inappropriate risks
- Changes in market conditions may render the strategy of an AM less effective – e.g. an emphasis on small caps may be very remunerative during boom times and then suffer in a recession
- Must monitor “style drift” i.e. deviations from the house’s professed investment philosophy

- Changes in staff must be monitored to ensure that essential skills are maintained and the house philosophy is consistently adhered to
- The AM may introduce changes to its decision-making processes that could affect future returns (especially when introducing new staff)
- Rapid growth may strain the resources of the AM. This could be in the support areas (admin. compliance etc.) or in portfolio management if the processes are not easily scaleable.
- Loss of clients or AUM may also destabilise the business especially if profits fall significantly
- Implementation of new systems may impact (positively or negatively) on the investment processes
- Need to ensure the AM is keeping up with new developments and industry trends e.g. new investment instruments, changes in legislation, more sophisticated risk management techniques.

ii)

Items should include the following information for the period between reviews:

- Thorough performance attribution and risk analysis of the portfolios
- Staff joining and leaving recently; impact on the levels of skills and experience
- Changes to investment processes and rationale for changes
- Changes to risk management controls
- Any changes to the style of any of the funds
- New products launched or products withdrawn
- Mandates won and lost in period and reasons for mandates being terminated
- Financial accounts of the AM company if publicly available. If not, some indication of growth in profitability.
- Any changes to ownership of the business
- Changes to the staff remuneration structure
- Any significant litigation, audit or regulatory issues
- Changes to admin procedures, systems etc.
- Communication to clients and scheme members specifically

iii)

Characteristics of ARF's:

- ARF's target a specific level of absolute return (usually real return) rather than a return relative to an index benchmark
- Often the target will specified as a return in excess of inflation – e.g. CPIX +4%
- In most instances these returns are not guaranteed and the AM will attempt to reach the target only over the medium term (rolling 3 or 5-year periods)

- In some instances the ARF will attempt to prevent any capital losses occurring within, say, a 12-month period

Suitability for DCF members:
- Real yield targets are in many cases an ideal investment target for retirement fund investors who are trying to maintain and grow the purchasing power of their savings
- The dampened volatility reduces the risk that markets are low when benefits are taken
- And is reassuring for investors who fear extreme market turbulence
- In most instances the returns "promised" are better than can be obtained by investing in index-linked government bonds which is the only passive way to be certain of achieving real returns
- So conceptually such products are highly appealing to members

But there is a wide spectrum of such funds available so it is important to understand what investment objectives this option is meant to achieve before choosing one as an option for members.
- Funds can vary by
    - Strategy (dynamic hedging, style rotation, risk-driven asset allocation etc.)
    - Degree of certainty with which the target will be met
    - Levels of market risk taken from time to time
- The risks and the expected return profile must be clearly understood as they will have to be explained to members in terms that are sufficiently clear to enable them to make an informed choice

Trustees also need to address the philosophical basis of ARF products
- If returns exceed those on index-linked gilts, and protect against market movements, where is the source of additional return and how likely is it to emerge consistently?
- This could be from active management, skill in determining market risk (but timing notoriously difficult), skilful hedge management etc.
- But hedging alone cannot add value
- Beware of rewarding for returns from beta rather than other sources
- Must weigh the opportunity costs (in terms of returns foregone) of the specific strategy vs. traditional balanced fund strategy returns against the benefits of reduced volatility
- Must factor in higher fees and embedded hedging costs typically associated with ARF's
- All this has to be done with very little empirical data available since most ARF's have been running for only a few years
- The product must be Reg. 28 compliant
- Members who wish to diversify could split fund between a traditional fund and the ARF obtaining a better risk/return profile.

iv)

The information is not sufficient to justify inclusion because:

- Proven expertise in one product does not necessarily imply expertise in another
- So the track record achieved in the one must not be imputed to the other
- Depending on the strategy involved, skills may be required that were not previously resident in the house
- Even if the strategy draws largely on existing skills they may need to be harnessed using different, untested processes
- There are inherent problems with back testing:
    - Danger of testing numerous strategies until one, fortuitously, produces good historical results that may not be replicated in future
    - There are numerous difficulties in practical implementation that are not evident in theoretical modelling such as:
        - Ability to deal in sufficient volume without moving prices
        - Risk management and compliance support needed when dealing in new instruments/markets
        - Administrative requirements for new instruments
- Trustees have a duty to ensure that all reasonable effort was made to ensure the effectiveness of the asset management.
    - This will require thorough analysis of the product's suitability in addition to the AM's operation
- And choosing an appropriate product within the genre

Further information required:

- Exact nature of the new product
    - Philosophy; the source of returns and how volatility of fund values is reduced without significantly impairing returns
    - The expected risk/return profile
- Extent to which product draws on existing skills with proven track record
    - E.g. extracting alpha from the equity market while hedging out the beta

- Additional processes used to evaluate the opportunities
    - Extent to which these are evolutionary or entirely new for the AM

- Where new skills, processes are employed these will have to be subjected to scrutiny to assess their efficacy and sustainability
- What new skills being brought on board
    - The track record, experience of the staff
- How staff involved on this product will be remunerated especially if differences with other staff's remuneration
    - Alignment with investor's interests
- Managing the product's growth:
    - Is there critical mass in the current portfolio
    - Is the product scaleable to cope with growth in AUM

        - How will the AM ensure minimal dispersion of returns between investors
- Does the product comply with legislative requirements and is it tax efficient
- Can the support functions and systems cope with the additional requirements of the new product; these might include:
    - Dealing
    - Risk management
    - Administration
    - Compliance
- Fee structure
    - Compared to other products and competitors
    - Value proposition: objectives realised and effort expended vs. cost
- How this fund compares to peer funds in risk and perfromance

v)
Statistics to be monitored and reasons:
In absolute terms:
- Absolute level of real returns over various periods
    - To ensure meeting the investment objectives of members (i.e. maintaining value of savings)
- Contribution to return from each source such as asset allocation, individual asset classes, hedging and trading
    - To ensure the sources of return are as expected

Relative to target:
- Return relative to target over medium term
    - To ensure the product promise is being realised
    - To evaluate the AM's competitiveness

Relative to traditional balanced strategies
- Comparative return over medium to longer term
    - To assess the effect of higher fees and the opportunity cost of the lower volatility
    - To ensure that product returns behave as expected in various market conditions (better in poor markets, worse in good)
- Volatility of returns over various periods
- Measures of return vs. downside risk (e.g. Sortino ratio, Omega function)
- Maximum decline in value over any 3 and 12 month period
    - To measure the product's effectiveness in dampening volatility and reducing downside risk
- Number of 1 and 3-year periods with negative real returns
    - To assess relative effectiveness of capital protection

Relative to index-linked bonds and real return on cash:
- Return in excess of risk free assets over medium to longer term
    - To ensure that there is value added in excess of the passive, risk-free investment

Relative to peers (provided a comparable peer group can be identified and measured)

- Return relative to peers
- Risk measures relative to peers
    - To ascertain effectiveness of AM in this sphere

Stress testing to gauge exposure to market movements

Question 2

This question is potentially confusing in that it requires the assimilation of a lot of information about the proposed transaction. However, methodical application of all the details given is all that a candidate needs to answer the various parts.

Again it must be stressed that candidates lose marks unnecessarily through their failure to pay attention to the context described in the question. For example, the terms of the vendor loan and the mention of empowerment must not be disregarded and “capital is repayable in 5 equal instalments” does not mean “interest and capital is repayable in equal instalments”. This is not at all to say that the question is designed as a coded message to be deciphered by the candidate. Rather it is carefully constructed to give as much guidance as possible as to what response is required, so careful attention to the detail will certainly reap worthwhile rewards.

When reference is made to a “large life insurance company” the candidate is expected to understand that in a South African context this entails a complex financial institution with a wide variety of liability funds and diverse asset portfolios.

A general appreciation of the process of investment decision making is invaluable to candidates in questions such as this. This includes the ability to identify the obvious information and analysis required but also to realise the limitations of what can be known before a decision must be reached and how to ameliorate the risks associated with the consequent assumptions and uncertainty. Students should also remember that any decision must consider competing investments and these can be directly comparable, and deemed more or less attractive, or dissimilar, and require more complex analysis of their relative merits.

MODEL SOLUTION

(i)

On Black Economic Empowerment

Will funding the deal assist your company in achieving its Financial Services Charter points?

On XYZ Capital:

Who are the people involved – are they credible?
How broad based are they?
Do they know anything about the Auto Manufacturing industry?
Quality of governance and governance structures

On the vendor loan:

The rate of interest payable
Term of the loan ; repayment schedule
Where does it rank vs. the loan your company will be providing?

On the vendor:

Reason for selling
Will he/she retain a stake in the business
Alignment of interest also whilst vendor loan outstanding
Locked in for at least five years?

On the business (Auto Manufacturing):

History of the business
Major customers
Geographic split: Local vs. overseas
Impacts sensitivity to Rand/$ etc. exchange rate

Size of order book
Existing contracts in place: number and duration
Potential for additional contracts
Price agreed for long term contracts
… who takes currency risk?

How stable margins of business?
Major competitors
Where do they sit on the cost curve

Sensitivity of demand to local and global economic conditions
In particular, how does demand vary with local interest rate cycle

Quality of management
Are they locked in through equity participation?

Value of net tangible, re-saleable assets to assess risk mitigation potential

Accounting information required

Copies of the Balance Sheets for last 5 years
Copies of Income Statements for last 5 years
Copies of Cash-flow statements for last 5 years

Information required to value the business

How are similar businesses valued?
How do other metrics e.g. margins, growth prospects etc. compare
Needed both to assess value of equity stake and
given the fact that XYZ financed 100% of their 70% stake, the higher the selling price, the greater the loan amount and hence the cash-flow that must be generated by the business to meet capital and interest payments => higher risk

Other

Internal capacity for this type of investment
Which funds would invest given the characteristics – unlisted, BEE driven rather than return driven, potentially high risk

Information on the structure of the deal

Is it tax efficient?
How are interests aligned (as dealt in part (ii))?
Who are the intermediaries, legal advisors etc. and which fees are being paid?
Forecasts of prime rate, sales, margins and earnings
Impact on CAR

(ii)

Payments in respect of the loan will have to be covered by cash-flows generated by Auto Manufacturing

Which has exposure to one industry only, making the ability to meet the loan payments (interest and capital) highly dependent on the conditions prevailing in the auto industry

In particular, depending on the local vs. foreign mix of the demand for valves there is a risk that demand for the product drops in response to higher interest rates
At the same time that interest repayments increase

Exact impact on EBIT will depend on split of fixed vs. variable costs of Auto Manufacturing

XYZ capital is better diversified

So less dependent on conditions prevailing in one industry, which means there exists a higher likelihood that the payments will be made

OR that outstanding loan amounts can be recovered in case of insolvency of Auto Manufacturing,
… depending of course on the strength of XYZ Capital's balance sheet.

Granting the loan to Auto Manufacturing rather than XYZ Capital, means that the owners of XYZ Capital are faced with an asymmetric pay-off profile
Viz. if Auto Manufacturing does well they stand to gain, but if it fails they lose nothing (other than not getting the gain)
This is a problem, given the fact that behavioral finance studies indicate that investors are not risk averse, but are loss averse instead

So the risk is that XYZ Capital's decision making re Auto Manufacturing starts reflecting this

E.g. may make decisions that result in huge pay-offs if the decision turned out to have been correct, but result in insolvency in the case of a wrong decision

Which means your company stands to lose any outstanding capital and interest

Subject to there being some value in the assets of Auto Manufacturing

It is therefore important that management of Auto Manufacturing retains a meaning full stake in the business (alignment of interest)

And that your company insists on Board representation of Auto Manufacturing

On the other hand Auto has no debt and the investor will have first call on its earnings and assets

(iii)

			i @ 12%
Capital outstanding start of FY year:	9:	30	3.6
	10:	24	2.88
	11:	18	2.16
	12:	12	1.44
	13:	6	0.72

Calculation of after tax earnings (to value 10% stake)

Sales expected 2013: 779*(1.05)^5 = 994

Average EBIT margin: (8+7+4+6+7)/5 = 6.4

Therefore: EBIT 64

Interest payable on Vendor loan: 20*0.12% = 2.4

Therefore Earnings before tax: 64 - 2.4 - 0.72 = 61

Earnings after tax at 29% 43

Therefore value of 10% stake: 17

IRR

-30	9.6	8.88	8.2	7.44	23.90

<u>23%</u>

(iv)
We need to make sure that the after tax cash-flows produced every Year will be sufficient to cover both the interest and capital payments
… under both the assumptions used in the calculations of section (iii) above
… and under more adverse conditions

The variables driving future cash-flows are:

- Sales growth
- EBIT margin
- The prime rate

So do sensitivity testing varying these, e.g. may want to do calculations using an EBIT margin of 4%, the low achieved over the period for which data is available

Given that the interest rate payable on the loan is at prime, which is quite low for a project as risky as this one, the financial viability depends greatly on the value that will eventually attach to the 10% equity stake

So one should test the sensitivity of the IRR to the variables that will drive the value of the equity stake in 5 years' time.

We then need to compare this with the hurdle rate for an investment with a similar risk profile as this one

Given that this is quite a risky investment
One would expect to earn a sizeable premium over the prime rate (assumed to average 12% over the five year period)
Say 4-5% pa
Which yields a hurdle rate of 16-17% pa, say
this is a gross of tax number

Also compare with IRRs that could be achieved on other projects with a similar risk profile

Other:
Requirement as per FSC means that may want to invest even if return slightly lower than would want for strictly financial reasons

Suitability for type of products the company offers
Policyholder or Shareholder investment
How big in overall context
Will it exceed any internal risk limits