

Actuarial Society of South Africa

EXAMINATION

2 NOVEMBER 2012

**Subject F205 — Investment
Specialist Applications**

EXAMINERS' REPORT

The standard of scripts was disappointingly poor for the most part. Most of the questions covered familiar topics and this seemed to lull candidates into complacency - they trotted out the obvious facts but failed to engage with the more subtle aspects of the scenarios given or give answers that were anywhere near comprehensive.

It seems it cannot be stressed enough that candidates should to pay close attention to the questions asked. There were numerous cases of candidates making unwarranted assumptions or drifting away from the specifics of the questions. This resulted in answers that were irrelevant or poorly focused and cost those candidates many marks. Candidates must learn to make the distinction between what can be reasonably assumed, because it is standard industry practice, and what inferences are unnecessarily limiting.

Question 1 (a)

This part was reasonably well answered - as it should be for a bookwork type question. But surprisingly few candidates demonstrated a truly deep understanding of these concepts or capitalised on the chance to earn many easy marks.

i) Growth

- Growth investors want to identify stocks with earnings growth higher than market average
- If earnings turn out higher than the market and the rating is maintained the stocks will outperform the market.
- But the growth must be unanticipated since any growth which is generally expected will be priced into the stock
- A recent high-profile example of a growth stock that has disappointed since its IPO is Facebook
- Growth investors usually focus on young companies and new industries since their growth is usually most likely to surprise on the upside
- Growth stocks will have a high historic PE ratio relative to market
- They usually have a low dividend yield
- And high price to book ratios relative to market i.e. are trading higher than their apparent intrinsic worth
- Investment returns are mainly in the form of capital gains
- since growth companies tend to reinvest profits to fund their growth rather than distribute earnings
- At times a growth strategy can be similar to a momentum strategy which could pay off in the short term

ii) Value

- Value investors seek stocks whose pricing suggest future prospects to be inferior to the market average
- But whose intrinsic future earnings/cash flows are underestimated by the market as measured by the current share price
- If prospects revert to market norms and rating of the stock increases
the stock will outperform the market
- Value stocks will have lower PE ratios
- higher dividend yields
- lower price to book ratios relative to market
- Value stocks are often in unfashionable or seemingly distressed industries
which causes investors to underestimate their potential creating an opportunity for value investors
- Value investors often build in a “margin of safety’ into their valuations to ensure that they buy stocks at a sufficiently big discount to true worth to compensate for errors in estimation of value
- This margin can be lucrative when the value eventually “unlocks”
- A value strategy can underperform the market for sustained periods of time before paying off.
- As was the case for Resource shares relative to Industrial and Financial shares for most of 2012
- A value strategy requires a fairly long time horizon and patience from investors

iii) Momentum

- A strategy that aims to capitalize on the continuance of existing market trends and the flow of capital to particular shares and sectors
- A belief that large increases in the price of a stock will be followed by more gains and vice versa for declining values
- This strategy/style capture gains by buying/holding “hot” stocks and selling “cold” ones.

- The basic idea is that once a trend is established, it is more likely to continue in that direction than to move against the trend
- Until that trend eventually reverses at some unknown point
- The momentum in the stock can be a result of either anticipated or actual earnings.
- A leading driver of momentum is a healthy quarterly earnings report
... where the company outperforms market expectation.
- This strategy/style to some extent exploits the behavioural shortcomings of investors, such as herding and over/under reaction.
- Seasonal effects may also help to explain some of the successes in this strategy
- This strategy carries more risk than some other strategies of investing due to a less solid underpin from fundamentals and dangers of the share being overbought due to irrational behaviour of investors
- Nevertheless the strategy works well over the short term
- As was the case for local Retail shares this year, largely due to foreign investment inflows
- And can work longer term if trends are sustained

Question 1 (b)

This section was very poorly answered. Even those who were confident in the previous question were unable to apply their knowledge to these specific scenarios. It was evident that most candidates have never given thought to the practical application of investment styles. Yet these are everyday concepts in portfolio management and should not have been a challenge to well-prepared candidates.

i)

If, as is usual, the trader is focussed on short-term trading and making gains through rapid turnover of trades

Neither growth nor value strategies are likely to be useful

... since both require longer time spans for the correctness of the view to translate into valuation increases

... and the timing of that occurrence is almost impossible to predict

If the trader has a slightly longer time horizon it is possible that the principles of growth investing could be useful by predicting near-term earnings surprises on the upside or downside which the trader can exploit by going long or short

Momentum investing is a common strategy for traders

.. since directional movements in markets and individual shares are more reliably detected over short time frames

... and lends itself to the use of technical analysis and trend graphs

ii)

Growth and value styles are both appropriate for this

... since both attempt to identify stocks that are trading below their intrinsic value

... and adding alpha above an index benchmark is the typical objective

Although there are separate CIS categories for specialist styles of equity investment

... the manager may prefer not to be identified too strongly with one style or the other, or may want the freedom to modify the style in some market conditions or even rotate between styles

Momentum is not a popular style for longer-term active asset managers

... because it does not apply to longer-term cycles (as in i. above)

... and the style is not valued as it can be seen as a lack of “true” equity valuation skills

But to the extent that the manager tracks an index, he is effectively riding the momentum of the market

... and some managers’ portfolios can unintentionally exhibit momentum characteristics through unwillingness to take strong views away from the index

If the manager is trading the momentum of individual shares there could be very high portfolio turnover

... which will not attract tax in the hands of the unit holders since only the sale of units attracts capital gains

... although in theory SARS can attack an institutional fund that behaves like a trader
Depending on the benchmark and/or explicit tracking errors that the fund is measured against, it may be difficult to follow any style with high levels of conviction

iii)

To the extent that the ultimate objective is real growth in the value of the assets of at least as much as the interest rate assumed in the pricing of the annuities

... both growth and value strategies are relevant

... as would be an indexing variant of the momentum style

However, the volatility of the asset values is also an issue

... since profits and losses on this book of business are calculated at every accounting period

Usually a portfolio using a value style will exhibit less volatility in absolute terms than a growth portfolio

... since the buffer provided by the intrinsic worth of the stocks protects the value of the portfolio against sharp losses when the market falls

Question 2

This question was very poorly answered in all sections. Again, the topics being examined are straightforward and yet almost all candidates were unable to engage with them in the context of a very real product development problem. The ability to apply knowledge is a fundamental requirement for these examinations and candidates who are unable to do so cannot hope to achieve a passing grade.

It is almost certain that many candidates have the necessary ability but often just fail to give a good account of themselves – but they need to demonstrate their ability before the examiners can award the marks. For application type questions such as this it might help if candidates mentally put themselves into the shoes of the person with the problem being posed and thought about what they would do or consider if the problem was really theirs to address.

A number of candidates made the entirely unjustifiable assumption (amongst others) that the savings products would be non-linked. Naturally this restricted their thinking and the scope of their answers. This is just one area where this phenomenon occurred.

a)

Apart from the comments above which apply fully here, failure to systematically address all the information given was the main reason for candidates faring poorly in this section. As a result most answers were far too light in content for a question carrying 15 marks.

Portfolio construction challenges

Each of these criteria is difficult to achieve in isolation

Protection of capital and growth of the purchasing power of investments

- Insurance policies carry a heavy load of costs
 - o Capital charges; intermediary commissions; shareholder loadings; administration expenses; asset management fees.
- This makes it difficult to guarantee no loss on capital cost-effectively
 - o or to produce attractive rates of return in excess of inflation
- The problem is exacerbated in the current environment of very low interest rates, which makes the pricing of protection structures expensive
- The only asset class guaranteed to keep pace with inflation (if held to maturity) is index linked bonds
 - o And demand has driven real yields so low (well below 2%) that the returns may be barely enough to cover just the expenses

Client access to funds

- Apart from the constraints of insurance legislation it is difficult to structure products with an attractive value proposition if the term of the investment is unknown at the outset
- This imposes a liquidity constraint that would preclude a wide range of asset classes (even ignoring the clients' risk appetite)

Product ease of explanation

- This market segment is not financially sophisticated
- This does not mean that products cannot be financially complex in generating the outcome to the client
 - o But from the client's perspective the product promise will have to be very simple to explain or there is a high risk of mis-selling
- So any complexity that increases the risk to clients should be avoided
 - o E.g. this would include passing the risk of the investment return from an absolute return type fund - where the probability of not meeting the target of inflation-plus returns over the product life is not insignificant – onto the client

It is even more difficult to achieve the criteria in combination

Returns vs. Access

- Providing clients with access to their funds limits the investment strategies available
 - o Growth assets are inherently volatile and would be inappropriate as a strategy if returns are guaranteed over short terms
 - o But defensive assets are unlikely to deliver required returns after expenses
 - o Even defensive assets like longer dated bonds may be unsuitable
 - o Protection structures are usually designed to pay off only after a specified term

Returns vs. Ease of understanding

- Returns can only be augmented by taking on risks such as market volatility or credit risks
 - o But most investment risks are unlikely to be well understood by the clients
- Clients' demand for simple products can be met by giving guarantees
 - o If these are underwritten by the insurer it increases capital requirements and hence costs
 - o If underwritten by a bank there will be dilution of return to cover bank's margins and the introduction of credit exposure to the bank (albeit small)

Accessibility of funds vs. Ease of understanding

- To create products that allow clients to access their savings more easily the product will have to
 - o ... invest very conservatively
 - o ... or apply surrender conditions
- In the first instance clients who do not access their funds may be disappointed with the meagre returns generated from near-cash portfolios

- In the second instance clients who are unaware of market dynamics will not understand why their money has diminished in value when they withdraw their savings

b) Passive investment strategies

This section was surprisingly poorly answered. Numerous obvious points (like the assumption that passive is cheaper on a net basis) were often ignored. There was also no reason for candidates to limit their discussion to equities. Many candidates seem ill-at-ease with the practical aspects of portfolio management and construction and this is evident in answers that are vague or plainly misguided.

Philosophical basis of passive investment

- The primary motivation for using passive strategies seems to be to minimise costs
 - o This pre-supposes that active management does not add more value by alpha generation than it detracts through costs
- This is still a hotly debated topic in the SA equity market context
 - o It seems that through market cycles active and passive strategies alternate in effectiveness
 - o This is largely driven by varying levels of volatility (because high volatility causes all shares to move in unison negating stock picking advantage)
 - o ... and the success or otherwise of large cap shares (because indices tend to have a higher weighting of them)
 - o Active bond managers appear to be able to outperform passive strategies more consistently
 - o ... but the scope for outperformance is more limited
 - o ... and this may be purely a function of using ALBI, which only contains government and quasi-government bonds, as a benchmark as opposed to something more appropriate
 - o And the fees are lower than for equities so the savings are also less
- Another consideration is the product's sensitivity to downside
 - o It is often argued that passive management guarantees a return less than the index (after costs) while active management has the potential to outperform the index after fees, if the right manager was chosen
 - o But active management also creates the potential to underperform the index – possibly by a large margin, especially net of fees
 - o If this outcome (perhaps at a time when markets are also falling) is very detrimental to the product, putting a cap of the downside relative to the index could be an attractive feature

Availability of passive vehicles

- Vehicles are not available for all asset classes or strategies
- In SA it is easiest to track equity indices - via ETFs and passive CIS funds
 - o ...but equities may only be a small part of these portfolios

- The cheapest indices to track (such as the ALSI40) may also have the least appropriate risk profile
 - o Vehicles to track the more desirable indices may not be available
 - o ... in which case the costs of creating them might negate the anticipated savings
 - o ... or they might be subject to higher tracking errors because replication is problematic
- However, the choice of vehicles is widening as the range of ETFs and passive CIS funds is steadily growing

Which index to track

- Passive investment locks the returns onto that of the index being tracked, with minor variations for costs and errors of matching
- But choosing the index is likely to have a far more decisive effect on the investment outcome than the difference between the returns of the index and the average active manager
- Much recent research has concentrated on the inefficiency of cap-weighted indices
 - o So finding a more efficient index, and especially one with desirable risk characteristics, would be highly beneficial and probably more than compensate for any lost alpha
 - o E.g. an ETF based on high dividend paying shares might have a desirable “value” profile rather than the SWIX40

How much is saved?

- Overseas it is often said that “beta is free” because passive management is so cheaply available
- But for SA equities, passive management is unlikely to be available for less than 20bps
- So the saving for a large equity fund is probably in the order of 25 to 35bps
- In other asset classes like bonds the saving is even less
- But fees for passive investment are on a declining trend - and as passive funds become more commoditised over time the savings will increase

“Smart passive”

- There is a developing range of semi-passive products called “smart passive” funds - quasi-indexed portfolios with actively chosen sector or style tilts or biases in an attempt to add outperformance or improve the risk characteristics of the portfolio
- By specifying a lower tracking error and deploying a lower risk budget the risks of underperformance are reduced
- They could be useful in providing reasonably low cost portfolios that have appropriate risk/return characteristics to suit the savings products
- The use of these, and any non-vanilla passive funds, does imply that research on the vehicles and the asset managers will be required – with the associated costs

c) Aligning interests on fees

This was another section where most candidates gave little evidence that they had ever given thought to such a commonplace issue as the structure of asset management fees. Consequently the standard of answers was unforgivably weak.

A common structure of fees is

- ... for the asset manager to charge a fixed base fee in percentage terms
- ... with a performance fee paid if a hurdle rate is surpassed
- The choice of hurdle rate is critical to ensure that the manager is only rewarded for alpha added
- This goes some way to aligning interests because the manager benefits most when it produces superior returns for the client
- But the balance still favours the asset manager
 - ... because the base fee is seldom more than 10 basis points less than the fixed-only fee whereas the performance fee is usually capped at much higher levels, like 100bps in total across all components
- The asymmetry in benefit can be illustrated by postulating an unethical manager using this structure and managing half its clients with one extreme market view and the other half with a diametrically opposite view
 - The manager will earn the fixed fee on all clients and quite possibly the full performance fee on the half that benefited by actual market conditions
 - If the fee basis was 50bps + 20% capped at 100bps the manager will earn 75bps on the total portfolio (50bps on one half and 100 bps on the other) without requiring any skill
- A manager may also be tempted to take excessive risks in order to earn the performance-based fee

To more fully align interests, the fee structure might

- Include more severe penalties for underperformance such that the asset manager only covers costs or even incurs losses
 - This would probably only be feasible within a group - where the ultimate good of the shareholders of the group takes precedence over the earnings of the individual entities within the group
- Include claw-back clauses that allow for past performance fees to be refunded if later performance flags
 - To ensure that transitory performance is not rewarded and
 - ... the performance fee does not in effect give a free annual call option to the asset manager
- Adopt the strategy of a “high-water mark” commonly used in hedge funds
 - This ensures that future outperformance is not rewarded until past underperformance is made good
 - Again this should work well with an in-house manager which will have to answer to the group board and cannot cancel the mandate if it gets too far “under water”
- Monitoring and calculating these watermarks and claw-backs can get very complex

d) Absolute return fund risks

A lack of industry knowledge hampered some candidates in part i. Parts ii. and iii required some subtlety of thinking in identifying the risks and how to manage them even though they are beyond the control of the life office. This was a more difficult section than most but candidate should have been able to make a reasonable attempt by approaching the problems calmly and analytically.

The last two parts of the question were somewhat ambiguous (especially if taken in isolation, ignoring the context previously provided) but the examiners allowed leeway for this in the marking and awarded marks for answers that used a different, but plausible, interpretation of the question.

i. Strategies

- Most ARFs invest in a mix of asset classes
 - o ... using defensive assets like cash and fixed interest assets to aid capital protection
 - o ... and growth assets like equity to achieve inflation beating returns
- Often inflation linked bonds are a feature to since they constitute an asset well correlated with the objective
- Derivatives are often used to hedge out extreme market risk
 - o ... and improve the capital protection characteristics of the funds
- Some funds employ asset class rotation
 - o ... moving the balance of the portfolio from more expensive to cheaper asset classes based on historical measures of cheapness/deariness or the manager's views on economic outlook
 - o The higher the return target the more aggressively the fund will have to apply this strategy
 - o ... with the associated risk of missing the return target altogether
- The exact mix of assets depends heavily on how aggressive the performance target is
 - o Inflation plus 3% can be achieved with a predominance of defensive assets
 - o ... while inflation plus 7% is only achievable by taking substantial investment risks - usually equity market risk but also possibly a combination of liquidity risk, credit risk, asset rotation risk etc.

ii. Risks

- Absolute return funds do seem to offer an attractive return signature in this scenario since their performance objectives match those of the savers
 - o But these are goals and never guarantees
- The objectives of real growth and short-term capital protection are in conflict
- There is no strategy that will automatically guarantee the desired mix of capital protection and real returns in all market conditions
 - o So the delivery of the promise always relies on the skill of the asset manager
 - o ... and the appropriateness of the strategy employed to current market conditions

- As a result there is a significant probability that the strategy will fail
 - o ... and past experience proves this
- Often this will occur at times of severe market distress when neither the capital protection nor the real return objectives are met
- But it also occurs in more benign times - if markets perform strongly contrary to the manager's market view
- The client is exposed to the behavioural risks to which asset managers are prone
 - o ... such as excessively optimistic/pessimistic market views, reluctance to crystallise losses/gains etc.
 - o In balancing the fund's objectives, managers often underestimate the downside risk thereby putting the capital protection target at risk
- If the performance target is set too high the manager may take on too much risk at inopportune times in an attempt to reach the target
 - o This could be exacerbated if performance fees are at risk tempting the manager to expose the client to undue risk

iii. Risk management

- Ultimately some risks cannot be avoided
 - o But they must be evaluated
 - ... and deemed appropriate to the clients' needs
 - ... and commensurate with the expected return profile
- The fundamental requirement is to understand the investment process of the manager for the ARF
- ... which includes understanding fully:
 - o the manager's investment philosophy
 - o the investment decision making process – inputs, analysis employed, decision nodes...
 - o ... and hence the sources of risk and return
 - o ... and the risk budget allocated to each source of risk
- Must review the performance track record relative to the objectives
 - o ... and in various market conditions to assess the robustness of the process
- Assess the dependence on the abilities of key individuals
 - o ... and hence how replicable the strategy will be in future
- There must be ongoing performance analysis
 - o ... to ensure that the product performs according to expectations and exhibits the stated risk profile

Question 3 (a)

This section should have been a giveaway for all candidates. The derivative structures mentioned are all commonly used in institutional portfolios. Yet many candidates avoided addressing some of them, presumably due to complete lack of knowledge – a lack of knowledge that others demonstrated rather too clearly by their woefully incorrect answers.

General

- Using derivatives as an overlay structure to protect equities to some extent against a market decline will reduce the volatility of the equities.
- The investment policy statement of the LO and the mandates must allow this
- One can use OTC options or SAFEX listed options
- OTC:
 - need ISDA + CSA + Detailed contract tailored to own needs
 - additional counterparty risk
 - no margin payments required – good for cash management
 - more types of structures available OTC, customisation possible
 - valuation issues, marked to market or to model?
 - usually of fixed term, not liquid

SAFEX:

- margin required initially and daily thereafter
- negligible credit risk
- valuations available daily
- Fixed close out dates may not coincide with the LO need for protection on statutory reporting dates
- Keep dividends or use it to pay for the protection
- LO needs to hold less required capital if investments are less volatile
- Added complications vs. selling the equities for less volatile asset classes.
- Maintain real return characteristics to some extent, while reducing risk
- Maintain risk capital nature of the returns of equities + dividends vs. the income

nature of bonds/cash for tax purposes

- If the term of the derivatives is long the effectiveness of the hedge can be poor because of the large effect of time value on pricing

Especially when implied volatility is high

- Tax impact: equities generate dividends and capital gain vs. the income from cash and bonds, the most likely alternatives in a de-risking scenario.

1

- Very little downside risk
- Unlimited upside
- Very high initial cost/expensive, especially in a low interest rate environment
- Best suited for a once-off hedge for a specific purpose
as the costs of rolling in a flat or upward trending market will be ruinous
- Might not need such a lot of protection

2

- Buy a put to give protection
+ sell a put further out of the money
to reduce the total cost
- Gives limited downside protection
- Unlimited upside

3

- Do a put spread as in (b)
- + sell a call out of the money
- to reduce the cost even further
- or even make it zero.
- The short call reduces/caps the upside potential but within the bands the fence still captures the equity-like nature of the returns.

- No counterparty risk
- Liquid and hedge can be reversed any time
- Fixes the price of the shares and
- Effectively changes the equities to cash
- No upside and no downside
- Good short term hedge

Question 3 (b)

This was intended to be a difficult question. The concept is currently highly topical in the management of institutional savings pools but is admittedly not likely to be well known to most candidates. So the challenge for them was to take the information given and deduce what they could about the mechanism that is being proposed and the likely implications of using it. Again a cool head and an analytical approach was required if the candidate was to gather at least some of the marks on offer. As is usually the case, there are also some fairly generic points that are valid to make in this instance and candidates should always aim to garner these at the very least.

- The solution is self-financing,
where you do asset allocation between cash and equities to replicate a hedged equity payoff profile
- You basically hedge equities internally
- Without buying options from a Bank
- No transfer of risk to a Bank, ie taking on the risk yourself, but managing it
- But if done effectively could work well
- At hugely reduced cost, because you are dis-intermediating the banks
- No counterparty risk, ie credit risk
- No documentation and legal risk
- A huge amount of operational risk added
 - Systems
 - Skills

- Risk management
- In practice the portfolio manager/derivative manager would trade inside the portfolio replicating what a Bank would do, had the L.O. bought the options from them.
- So, instead of having a portfolio of equities with options as an overlay the L.O. would now sit with less equities plus cash (as the Bank would have + cash and - equities on its side)
- the manager would have to delta trade this portfolio every day or when required
- i.e. buy/sell equities so that the delta of the portfolio matches the required exposure as the market moves
- might not be what the statutory actuary had in mind as he does not want to sell the holdings
- will lead to additional trading expenses
 - Brokerage
 - Transfer tax
- Will the manager only look at delta hedging or at the other greeks as well?
- The risk of losses with big market moves are considerable if gamma risk is not controlled at expiry especially
- You will also make losses if the actual volatility experienced during this time is higher than assumed initially
- This solution will have a lower after tax return than equity with overlays as some of the capital and dividend returns will now be in the form of income through the cash holding
- This solution does provide the opportunity to hedge certain guarantees internally where the banks might not be willing to hedge it, ie longer term protection