

EXAMINATION

April 2007

Subject ST5 — Finance and Investment Specialist Technical A

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.

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Chairman of the Board of Examiners

June 2007

Comments

Most candidates scored well on questions 5 and 6 with many achieving full marks. Although some candidates scored well on questions 2 and 3 also, most candidates attained closer to half the available marks. Questions 4 and 7 were the worst answered with candidates achieving typically scores of less than a third of the available marks. For example, few candidates were able to identify multiple likely reasons for underperformance and most were unable to describe a debenture trust deed and the advantages thereof. Although it was pleasing to see the scores achieved by better candidates, it continues to be a source of frustration and disappointment that candidates appear to ignore valuable information contained within the question and lose easily achievable marks as a consequence.

In every diet there will be candidates who are very close to the pass mark and yet receive an FA — indeed I suspect candidates would be very surprised to see just how tightly distributed the marks are; deciding where the pass mark falls will have a material impact on the numbers of candidates who are successful and the examiners take great care to ensure a consistency of standard across candidates, subjects and diets. The pass rate for this diet was very similar to the last session although the pass mark was higher, reflecting the overall higher scores achieved by candidates on “bookwork” parts of questions.

All extenuating and mitigating circumstances were considered in awarding grades — coincidentally those candidates who had submitted the most severe mitigating arguments had in fact achieved sufficiently high marks to justify a Pass grade.

Notwithstanding the high scoring on bookwork elements, candidates should note the bias in the paper towards recognising higher level skills and practical application — this is intentional and will continue. Likewise the examination system does properly allow for prior subject knowledge to be assumed. It is not appropriate to repeat all relevant material within the Core Reading and in the exam creation process, the profession takes great care to ensure that the paper can be answered by a candidate who has taken a “normal” route through the exams - indeed questions have been removed from previous draft papers as a result. Candidates looking to progress should be aware that the SA series of exams, particularly investment related, are even less bookwork focussed and require the candidate to demonstrate a breadth and depth of competency as would be expected from a practising actuary in a constantly changing discipline. Hence simple regurgitation of bookwork will not be sufficient to ensure a Pass grade. Candidates should ensure they familiarise themselves with the current investment issues facing institutional investors in the 18 months preceding a diet and the solutions being debated by the various stakeholders.

- 1**
- (i) The risk-free rate of return is the rate of return on a security which has no credit risk. Assets providing such a return include fixed interest government bonds, inflation-linked government bonds and short-term government bills.
 - (ii) Required return = Required risk free real rate of return + expected inflation + risk premium
 - (iii) For an asset with certain cashflows (e.g. a bond) the risk premium can be estimated from the price since an IRR calculation can be carried out, although an adjustment needs to be made for default risk.

Conversely, the risk premium from the price of an asset with uncertain future cashflows (e.g. an equity) cannot be estimated using an IRR calculation.

This leads to a need to analyse historical data, although this may not necessarily be a good guide as the risk premium is based on expected return, rather than achieved return.

- (iv) Distortions that need to be corrected for in an analysis of historical risk premia would include:

Survivorship bias — allowance needs to be made for the returns achieved on securities which have been removed from a sample due to defaults or removal from a reference index. Allowing for this factor will typically reduce the measured historical return.

Market valuations/risk preferences — allowance should be made for changed valuations of securities through changes in investor risk preferences. Investors may be willing to accept a lower/higher risk premium for a given level of volatility, leading to higher/lower prices currently than in the past.

Achieved dividend growth vs expectations — part of the risk premium will reflect expectations in future dividend growth. If dividends have grown at a faster or slower rate than originally expected by equity investors, this could lead to an inaccurate estimate of the risk premium based on historical return data.

- 2 (i) If the economy is moderately buoyant and profits are fairly stable, both defensive and cyclical companies might be similarly rated in terms of the P/E ratios.

As the economy starts to move into recession P/E ratios for cyclical companies are likely to fall while those of defensive companies will remain stable or may even rise slightly.

At the bottom of the cycle P/E ratios of cyclical companies will probably have risen from their low point as earnings have fallen, but defensive stocks will still be more highly rated.

As the economy starts to recover, the P/E ratios of cyclical companies will rise in anticipation of future earnings growth. P/E ratios of defensive companies may now be lower than those of cyclical stocks.

As growth continues, the earnings of cyclical companies will catch up with the share price and P/E ratios will fall back towards their long-term average level.

- (ii) Value stocks typically have low P/E ratios (12 or lower) and higher dividend yields (4% or more). They tend to be stocks with low expectations of future earnings growth or are out of favour with investors (reflected in the P/E ratio).

Conversely, growth stocks typically have high P/E ratios (20 or higher) and lower dividend yields (2.5% or less). These tend to be stocks with higher expectations of future earnings growth (reflected in the P/E ratio).

- (iii) The neutral weights for the three stocks are 12.5% stock A, 62.5% stock B and 25% stock C. The PE ratios are 10, 20 and 8 respectively, with stock A yielding close to the average, B having a slightly lower than average yield and C a high yield. These two measures suggest that stock A has a small value bias, B has a growth bias and C has a value bias, hence the weightings in the two investors' portfolios.

- (iv) A: $24/20 \times (1 + 3.2\%/2 + 3\%/2) - 1 = 23.7\%$
B: 28.3%
C: -16.6%

Value return = $10\% \times 23.7\% + 30\% \times 28.3\% + 60\% \times -16.6\% = 0.9\%$
Growth return = 22.9%

- (v) Small-cap, large cap, momentum, rotational, contrarian, top-down, bottom-up (brief description of any three or any other relevant style properly defined)

- 3** (i) Agency costs can arise in an organisation where the owners have delegated operational decisions.

They become increasingly likely as an organisation grows, although they can also occur in a smaller organisation where the owners and managers are separate.

This separation of ownership and management can lead to a divergence of interests, and such conflicts of interest are called principal-agency conflicts.

Agency costs are defined as the costs of monitoring the agents (managers) and influencing/incentivising them to act in the interests of the principals (owners)...
...and thereby reduce conflicts/create alignment.

Without such monitoring or influencing, management may act in a way that diverges from the interests of the owners, and this is arguably a consequence of rational behaviour by the management seeking to exploit their position.

- (ii) Conflicts of interest arise between equity and bond holders since bond holders have no upside potential beyond return of their capital and interest payments but are exposed to downside risks.

Conversely equity holders have significant upside potential and typically exercise day to day control over the company, leading to conflicts.

Possible conflicts can include:

- Equity holders underinvesting in a company to increase profits, whilst reducing long term security for bond holders.
- Equity holders influencing management to take excessive risks, increasing the default risk of the firm (at the expense of bond holders, but not necessarily for equity holders on an expectation basis).
- Equity holders taking excessive dividends from the company, reducing asset cover of liabilities (including payments due to bond holders).

4 (i) Fees & Expenses

The investors in the fund must pay investment management fees, custody fees, audit fees, governance fees and administration fees whereas such fees are not taken into account in the calculation of returns on FTSE 100 Total Return Index.

Cost of Rebalancing

The FTSE 100 Total Return Index does not take into account the costs of rebalancing the index for such activities as new entrants, exits, mergers and takeovers and changes in the market capitalisation of constituents.

Such costs include stockbrokers' commissions, stamp duty and other levies.

Cash Holdings

When the fund manager receives small amounts of dividend income, it may not be cost effective for her to invest such small amounts across the entire 100 constituents in the correct proportions. The manager will therefore have part of the portfolio invested in the constituents of the FTSE 100 index and part invested in cash. The cash holding will cause the manager to under perform the index in a rising market and out perform the index in a falling market. This can be a significant issue when there are large inflows or outflows from the fund, particularly if asset volatility is higher than typical.

(ii) Futures

The manager may be able to reduce the drag on investment performance arising from cash holdings by using FTSE 100 futures contracts.

Stock Lending

The manager may be able to reduce the size of her under performance by engaging in stock lending whereby she will receive a fee for lending stocks to other institutions (such as the prime brokers of hedge funds) on a collateralised basis.

- 5**
- (i) Marks should be awarded for the following features:
Same axes and same scales — one rather than two diagrams;
Common strike price
2:1 ratio of premiums (suggested on inspection by eye)
General shape of each option's "hockey stick" diagram.
- (ii) Marks should be awarded for the following features:
Same axes and same scales — one rather than two diagrams;
Common strike price of the combined option portfolio;
Maximum loss of 3 units (implied by 2:1 ratio of premiums for basic options in (i)) (suggested on inspection by eye);
"V" shape of diagram.
- (iii) The portfolio of options pays off at maturity when there is a large move either way in the price of the underlying stock over the life of the option.
- Conversely investors in the portfolio of options will lose out if there is little or no movement in the price of the underlying stock by the maturity date of the option.
- 6**
- (i) Confidence: It is important that there is confidence in the financial system.
- Systematic Failure: There is a danger of problems in one area spreading to other parts of the financial system.
- There is believed to be a significant asymmetry of information, negotiating strength and expertise in the financial markets especially among retail investors.
- (ii) The direct costs of regulation arise in administering the regulation and in compliance for the regulated firms.
- Some possible indirect costs include:
- Consumers behaviour is altered which gives rise to a false sense of security and a reduced sense of responsibility.
 - A reduction in the consumer protection measures developed by the market itself.
 - Product innovation is reduced.
 - Competition is reduced.
 - The sense of professional responsibility amongst intermediaries and advisors is undermined.

- 7** (i) Trusts constitute a relationship between persons in which one person has the power to manage property and the other person has the privilege of receiving the benefits from that same property.

The legal owner of the property of a trust is called the trustee and she has the right to possession of the property.

The beneficiary of the trust is the person who receives all the benefit from the property.

The divisions between legal and beneficial ownership are normally created by an express instrument of trust known, usually, as the deed of trust.

The trust deed will also specify the beneficiaries by name or as being persons who are members of a particular group.

Trustees are required to act in the best interests of the beneficiaries of the trust.

The standard of care required of trustees varies with their level of expertise in that a higher standard of care is required of those who hold themselves out to be professional trustees compared with an “ordinary” man.

- (ii) In a debenture trust deed, the individual interests of the usually substantial number of holders of a debenture are channelled into the trust.

The trustee holds and protects the aggregate of the personal rights of all members of the trust.

A debenture trust may be thought of as providing efficient administration.

- 8** (i) Raising new or refinancing capital — many possible purposes, acquisition, investment in the business, fund new projects, financing of pension fund...

Restructuring the balance sheet — share buy backs, securitising future cashflows.

- (ii) Spread over government yields reflects the extra premium that the bank must pay to compensate the investors for extra risks of reduced liquidity and default. These risks should be similar regardless of the currency of the bond issue. It is likely that the bank earns its cashflows in local currency so has no exposure to sterling — so one may argue that the sterling denominated issue has additional currency risks and should have a higher spread to governments to compensate. The spread is also affected by supply and demand dynamics — the lower spread in £ reflecting a higher level of demand.

- (iii) Assuming the bond doesn't default

Yen 3.75% p.a. £ 3.25% p.a. $(4.5\% + 1.25\% - 4.5\% + 2\%)$

The government bond used for comparison has a similar maturity/duration to the “Japanese” bond being considered.

Currency movements reflect the interest rate differentials between the two countries.

- (iv) Issue bond in sterling
Implement forward currency transactions to neutralise currency mismatch risks

- 9 (i) The dealer is probably correct that initially spreads over gilts will be high due to investors' unfamiliarity with such an issue.

Also investors typically (but not always) prefer “vanilla” bonds without embedded exposures or options, leading to higher spreads on more complex issues due to difficulty in assessing if pricing is favourable or not.

However, it is also possible that there is considerable demand in the investor community for such issues, in which case initial spreads may be lower.

If the market does become more confident about these bonds then subscribing would offer the prospect of say a 50bps reduction in spreads, which would amount to 6% increase in value if the duration was 12 years (for example).

Alternatively, if the market did not develop strongly, this could result in the fund being stuck with a long-term illiquid issue albeit providing a modest spread over “vanilla” bonds of a similar term and credit. If the bond had a shorter term e.g. 5 years, this would be less of a concern.

Such a negative scenario could also occur if the market for mortality-linked bonds does develop, but with different design features.

Assess impact on duration of the new bond from sensitivity analysis of expected annuitants survivors. Also important to assess the resultant duration of the fund from the desired allocation to the new bond, and relative to the duration of the reference index.

- (ii) Further investigations:
 - Some sensitivity testing of ultimate proceeds and how mortality experience might impact on the ultimate return, most likely using stochastic analysis.
 - Need to understand how sensitive the return on the bond is to mortality experience, as opposed to economic factors. In the longer term it may become important to monitor the sensitivity of the fund to mortality factors, from a risk control point of view.

- Investigate size of potential market, from both a supply and a demand point of view.
- Feedback from internal analysts and external market participants, e.g. asset managers, bond dealers, analysts.
- The proposed offer price of the bond is a key bit of information that would be required.
- Specific information on the pool of insured annuitants should be investigated.

END OF EXAMINERS' REPORT