

# **EXAMINERS' REPORT**

April 2010 examinations

## **Subject ST5 — Finance and Investment Specialist Technical A**

### **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.

R D Muckart  
Chairman of the Board of Examiners

July 2010

## General comments

*Candidates typically answered Questions 2, 4 and 6 much better than the others, with Question 3 and 5 attracting the worst responses. Question 5 represented the opportunity to demonstrate higher level skills in terms of non-standard/practical application of theory to current issues in investment. Question 3 required the manipulation of accounts and core financial information – arguably a key skill in any exam looking at financial and investment matters.*

*Most candidates seemed to identify and understand the key issues being examined and so appreciated the general content of solutions that the examiners were looking for – however those that were unsuccessful will find their solutions lacked sufficient detail or application of knowledge and scored lower accordingly (this was most evident in Questions 1 and 2 where the first parts were well answered, the latter part less so).*

*Candidates are reminded of a bias in the paper towards recognising higher level skills and practical application. Likewise the examination system does properly allow for prior subject knowledge to be assumed. Investment is a necessarily practical subject and, at this level, the examiners expect candidates to demonstrate a breadth and depth of competency as would be expected from a senior student in a frequently evolving discipline. Hence simple regurgitation of bookwork will never be sufficient to ensure a Pass grade.*

*In order to succeed, candidates must ensure they familiarise themselves with the prevailing investment issues and the general market background facing institutional investors in the 12–18 months preceding a diet, more so the solutions (and sources of) being debated by the various stakeholders. A recurring theme in recent years has been a move towards capital market rather than purely insurance and asset management solutions – hence questions regarding banking and derivative approaches to asset and liability risk management or modern financial theory and commercial applications should be considered likely scope for examination. Against a background of the credit crisis, new asset classes and ways of structuring investments will themselves generate new types of risk (such as operations, liquidity, credit and counterparty), so the need for new ways of regulation, monitoring and management. Finally the examiners encourage candidates to recognise there are different types of investor beyond purely pension funds and different taxation, time line and cost considerations will apply.*

- 1** (i) **Interest** – the exchange would want to ensure that there was sufficient interest in the index from investors, speculators and hedgers, who are the three main categories of derivatives users.

**Measurement frequency** – the index would need to be calculated frequently (e.g. daily) to ensure consistency between the contract values and the underlying assets.

**Calculation process** – the methodology for construction of the index needs to be transparent and well understood. This would need to extend to the weightings and replacement of different commodity assets and clear criteria about the quality/purity of the commodities being referenced, their location and delivery dates.

Without the above criteria being satisfied, volumes of contracts will be modest and the consequential liquidity of the contracts will be relatively low.

Whilst a niche contract may be considered worthwhile for an investment bank, for an exchange it would generally be considered to be a failure if volumes remained weak.

- (ii) At short maturities, the individual commodity derivatives may be more liquid due to hedging activity by producers and customers of the commodity. However, for longer maturities, there is diminishing interest in such hedging activity as producers and customers are less able to predict their production level and input requirement respectively. Also, there may be greater scope to pass on price changes to end-users, reducing the need to hedge.

Therefore at longer maturities, demand is likely to arise from the activities of investors and speculators. A broad commodities index would appeal to such investors who wish to express a positive or negative view on aggregate levels of demand (based on economic activity). In this scenario, derivative contracts based on an index would be far more liquid than those based on a single asset.

- 2** (i) Factors that need to be considered are:

- the total rate of tax on an investment including consideration of withholding tax
- how the tax is split between different components of the investment return
- the timing of tax payments
- whether the tax is deducted at source or has to be paid subsequently
- the extent to which tax deducted at source can be reclaimed by the investor
- to what extent losses or gains can be aggregated between different investments or over different time periods for tax purposes

- (ii)

- Lack of cash to fund tax bill
- Treatment of unlisted assets

- Subsequent losses
- Practical workloads
- Rate of tax?
- Impact on dividend policy
- Allowances?
- Impact on investor behaviour?
- International comparisons  
(with some words of explanation)

### 3 (i) Profitability ratios

$$\begin{aligned}
 ROCE & \quad \frac{\text{Netprofit before tax and interest}}{\text{Sharecapital} + \text{reserves} + \text{long term debt}} \\
 & = \frac{563.7 + 16.3}{1922.7 + 348.8} = \frac{580}{2271.5} \\
 & = 25.5\%
 \end{aligned}$$

$$\begin{aligned}
 \text{or} & \quad \frac{\text{Net profit before tax}}{\text{Sharecapital} + \text{reserves}} \\
 & = \frac{542.1}{1922.7} = 28.2\%
 \end{aligned}$$

*Asset utilisation ratio*

$$\begin{aligned}
 & \quad \frac{\text{Revenue}}{\text{Sharecapital} + \text{reserves} + \text{long term debt}} \\
 & = \frac{5121.5}{2271.5} = 225\%
 \end{aligned}$$

*Profit margin*

$$\begin{aligned}
 & \quad \frac{\text{Net profit before tax and interest}}{\text{Revenue}} \\
 & = \frac{580}{5121.5} = 11.3\%
 \end{aligned}$$

*Gross profit margin*

$$\frac{\text{Gross profit}}{\text{Revenue}} = \frac{1663.0}{5121.5}$$

$$= 32.5\%$$

*Operating profit margin*

$$\frac{\text{Operating profit}}{\text{Revenue}} = \frac{567.3}{5121.5}$$

$$= 11.1\%$$

**Liquidity ratios**

*Current ratio*

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{659.1}{743.1}$$

$$= 0.9 : 1$$

*Quick ratio*

$$\frac{\text{Current assets} - \text{inventories}}{\text{Current liabilities}} = \frac{659.1 - 364.4}{743.1} = 0.4 : 1$$

*Asset gearing*

$$\frac{\text{Borrowings}}{\text{Equity}} = \frac{348.8}{1922.7}$$

$$= 18\%$$

or

$$\frac{\text{Borrowings}}{\text{Borrowings} + \text{Equity}} = \frac{348.8}{348.8 + 1922.7}$$

$$= 15.4\%$$

- (ii) High asset utilisation (225%) but relatively low profit margin (11.3%) suggests a “pile ‘em high / sell ‘em cheap” strategy. Gross profit 32.5%, net profit 11% suggests that “Other expenses” are significant. Liquidity ratios look inadequate by conventional standards?

*But* the company is a retail operation with high levels of stock turnover and low levels of “Trade receivables” (since most sales are for cash). This is reinforced by the high levels of current liabilities in the form of “Trade payables” since there are typically long delays in paying suppliers for goods. This explains the anomalous liquidity ratios. Clearly, the ratios need to be compared with competitors, sector averages and historic equivalents to assess their adequacy.

The low level of gearing is due to the relatively low fixed assets especially freehold property). Instead, sale and leaseback is used to generate cash.

- 4**
- (i) Their personal circumstances/investment objective have changed  
Need for liquidity going forward  
They might be expecting a fall in equity markets  
They might expect equities to underperform relative to other asset classes over the short/medium term  
Tax benefits might have changed  
Any other sensible suggestion
- (ii) Any taxes associated with buying or selling assets  
Commission costs payable on sales and purchases  
Bid-offer spreads on both purchases and sales  
Price impact of selling or purchasing assets in the market  
Any charges by the transition manager or administration charges.  
Any foreign exchange costs that might be incurred.  
Any rebates that might be achieved by using MTFs  
Potential under / out performance due to the timings of equity sales
- (iii) (a) Owning such a large percentage of the equity market mean sales will have an impact on prices.  
The potential lack of liquidity due to size of current holdings – i.e. finding buyers (equities) or sellers (bonds).  
But some equities might be quoted on other exchanges (which might provide extra liquidity)  
Information leakage to the market about what is happening which will hinder ability to sell assets/purchase assets.  
The dealing costs involved  
The time needed to implement the change given the size of the holdings  
The possibility of tax, purchase tax or capital gains taxes
- (b) Potential solutions are to:  
Sell equity futures and purchase bond futures to change exposure without physical transaction.

Limitations – Suitable futures? Liquidity of futures? Basis risk  
Spread sales over a period of time  
Limitations – The investor might be expecting a market fall and therefore wants to dispose of assets quickly  
Information leakage if in the market too long or too many times  
Look for crossing opportunities with other investors to reduce dealing/spreads costs.  
Might not be people looking to cross  
Information leakage  
Use any cash flows into/out of portfolio to move closer towards the desired portfolio.  
Any other sensible suggestion

- 5** (i) Most liability-focussed investors will typically be interested in receiving an investment return within a domestic currency. This reflects that they are investing to meet a liability that comprises an obligation in an existing currency. Such investors would include insurance companies and pension funds, and the majority of retail investors who are investing to meet longer term domestic liabilities (e.g. retirement savings, debts etc.).

The GCU will have a strong appeal to investors who are more multinational in their outlook, and this group would include retail and high net worth investors with savings in excess of their domestic liabilities, and multinational investors such as corporates, sovereign wealth funds, governments, supranational institutions...

...who are currency-neutral for some or all of their assets.

- (ii) The interest rate is likely to be lower than that in other major currencies as the risk of devaluation through a weak fiscal policy will be removed. There is still some devaluation risk if weak fiscal policies in several countries leads to an expansion of credit and asset values rise, however this is a secondary risk factor.

Conversely, if the GCU is less liquid or less widely used than the major currencies, this will lead to slightly higher interest rates to reflect this illiquidity and higher transaction costs.

- (iii) Soon after the GCU is launched, there will not have been many loans issued that are GCU-denominated. Therefore there will be relative little supply of GCU fixed rates.

Any supply of fixed rates (payers) would arise from assets in other currencies being swapped to GCU interest rates. This activity would typically arise from the activities of borrowers in other currencies, or investors who wish to take a view on financing costs in the GCU being lower than in other currencies. Such a view might arise from a belief that the GCU will not appreciate relative to other currencies (allowing for the initial difference in swap rates).

Demand for fixed GCU rates (receivers) would come from investors who wish to take a view on financing costs in the GCU being higher than in other currencies.

There may also be a degree of hedging activity in either direction from recipients of relatively certain overseas cashflows who wish to pay fixed GCU rates, or payers of relatively certain overseas cashflows who wish to receive fixed GCU rates. This type of hedge would be more appropriate where the mix of overseas currencies was somewhat unstable, and less appropriate in other cases due to the additional basis risk relative to hedges carried out in currency pairs.

On the assumption that supply and demand are broadly in balance, one would expect the GCU swap curve to be lower than the US Dollar swap curve, with the GCU-US Dollar curve being downward sloping. This reflects that the expected loss due to currency depreciation will be much lower in the GCU than the US Dollar, due to lower/nil impact of fiscal policy on the currency.

Reasons why the above might not be the case in the short term might be that the GCU is not as liquid as the US Dollar. This difference in liquidity may itself have a term structure, complicating the comparison.

- (iv) The difference between the Euro and GCU swap curves should have a flatter term structure than the difference between the US Dollar and GCU swap curves. This reflects the weaker impact of a single country's fiscal policy on the value of the Euro compared to the US Dollar, although there should still be a downward slope as there is a risk of concerted policy actions at times of deflationary pressure.

- 6** (i) Invested in different strategies, different portfolio manager  
Invested in different asset classes  
Different investment restrictions or tracking error limits  
Frequency of rebalancing might differ  
Investment fees charged by the manager might differ  
Cashflows during the year can alter performance  
Different tax status



(ii) Portfolio returns are net of investment manager fees and taxes

<b>Start value</b>	<b>2600</b>	<b>benchmark</b>	<b>100</b>
Domestic Equities	291.4		10
Overseas Equities	728.6		25
Cash	410.0		15
Bonds	1170.0		50

	<i>Quarter 1</i>	<i>Quarter 2</i>	<i>Rebalance</i>	<i>Quarter 3</i>	<i>Quarter 4</i>
Domestic Equities value	314.7	335.2	281.7	266.2	270.2
Domestic Equities return	8.0%	6.5%		−5.5%	1.5%
Benchmark return	7.4%	6.5%		−7.0%	2.0%
Overseas Equities value	801.5	777.4	704.2	612.7	704.6
Overseas Equities return	10%	−3%		−13%	15%
Benchmark return	10%	−4.2%		−11.0%	12.0%
Cash value	418.2	426.6	422.5	439.4	443.8
Cash return	2.0%	2.0%		4.0%	1.0%
Benchmark return	1.5%	2.0%		5.0%	1.0%
Bonds value	1216.8	1277.6	1408.4	1366.1	1420.8
Bonds return	4.0%	5.0%		−3.0%	4.0%
Benchmark return	6.0%	7.0%		2.0%	4.0%
Total portfolio	2751.2	2816.8	2816.8	2684.4	2839.3
Benchmark	2768.1	2862.2	2816.8 2862.2	2813.5	2964.1

### Quarter and Yearly Outperformance answers

**Calculate quarterly  
and total year out  
performance**

	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Benchmark</b>	
Fund	5.8%	2.4%	−4.7%	5.8%	Domestic Equities	0.1
Benchmark	6.5%	3.4%	−1.7%	5.4%	Overseas Equities	0.25
Outperformance	<b>−0.7%</b>	<b>−1.0%</b>	<b>−3.0%</b>	<b>0.4%</b>	Cash	0.15
					Bonds	0.5
Year Fund	9.2%				Benchmark end value	2964
Year Benchmark	14.0%				Return	14.0%
Year outperformance	<b>−4.8%</b>					

(iii) **Stock attribution answers**

<b>Stock attribution</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
Domestic equity return	8.0%	6.5%	−5.5%	1.5%
Benchmark	7.4%	6.5%	−7.0%	2.0%
<b>Stock attribution</b>	<b>0.6%</b>	<b>0.0%</b>	<b>1.5%</b>	<b>−0.5%</b>
Overseas equity return	10.0%	−3.0%	−13.0%	15%
Benchmark	10.0%	−4.2%	−11.0%	12%
<b>Stock attribution</b>	<b>0.0%</b>	<b>1.2%</b>	<b>−2.0%</b>	<b>3.0%</b>
Cash return	2.0%	2.0%	4.0%	1.0%
Benchmark	1.5%	2.0%	5.0%	1.0%
<b>Stock attribution</b>	<b>0.5%</b>	<b>0.0%</b>	<b>−1.0%</b>	<b>0.0%</b>
Bond return	4.0%	5.0%	−3.0%	4.0%
Benchmark	6.0%	7.0%	2.0%	4.0%
<b>Stock attribution</b>	<b>−2.0%</b>	<b>−2.0%</b>	<b>−5.0%</b>	<b>0.0%</b>
Stock attribution total	5.8%	2.4%	−4.7%	5.8%
Benchmark total	6.6%	2.9%	−1.7%	5.1%
<b>Overall Stock attribution</b>	<b>−0.8%</b>	<b>−0.5%</b>	<b>−3.0%</b>	<b>0.6%</b>

**Asset class attribution answers**

<b>Asset class attribution</b>	<b>Q1</b>	<b>Q2</b>		<b>Q3</b>	<b>Q4</b>
Fund	6.6%	2.9%		−1.7%	5.1%
Benchmark	6.5%	3.4%	0.0%	−1.7%	5.4%
<b>Asset class attribution</b>	<b>0.1%</b>	<b>−0.5%</b>		<b>0.0%</b>	<b>−0.2%</b>

- (iv) Projection of past results – too much reliance on past results which are no guide to the future performance.  
 Timescale – balancing too frequent, which requires additional administration, to very infrequent – which limits the possibility of detecting any performance issues. Skill versus luck can be blurred over short-term.  
 Differing fund objectives – might not have a suitable benchmark or peer group to measure against  
 Impact on investment manager behaviour – knowledge of how being assessed could influence behaviour of manager to focus too much on measure and not using their skill.  
 Costs – costs of associated of monitoring and putting together reports etc.

**END OF EXAMINERS' REPORT**