

EXAMINATIONS

September 2002

Subject 301 — Investment and Asset Management

EXAMINERS' REPORT

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The examiners are mindful that a number of interpretations may be drawn from the syllabus and Core Reading. 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.

The report does not attempt to offer a specimen solution for each question — that is, a solution that a well prepared candidate might have produced in the time allowed. For most questions substantially more detail is given than would normally be necessary to obtain a clear pass. There can also be valid alternatives which would gain equal marks.

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Chairman of the Board of Examiners

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In general candidates did well on bookwork questions, made some reasonable attempts at knowledge parts but were disappointingly poor on the application parts of questions.

The paper had thirteen questions, more than have been set previously. As a consequence, however, the largest mark for a question was 12. Also the larger number of questions meant that more of the syllabus was covered but this should not have affected students' ability to obtain a pass.

Specific comments on each question follow at the end of the individual solution.

- 1** If there is a heavy encashment then the fund will need cash to pay out in respect of the redeemed units. The main way cash can be generated is by selling the investments held by the fund. Derivatives i.e. futures and options, will not generate much cash e.g. if futures are sold. Although they may lock into a particular level for selling, either markets or specific investments, this is not a particular issue as the fund's unit price is linked directly to the market prices for the fund's underlying investments. Using derivatives to reduce market exposure may produce a performance advantage but this is not a solution to the fund's cash flow problem unless the fund can borrow against the receipts from the derivatives contracts. However, the markets may have already adjusted to (or overreacted to) the recent severe shock with the result that reducing market exposure will not actually bring in performance benefits. Whether or not the fund is allowed to use derivatives is a point that would need to be confirmed.

This question was badly answered as candidates focussed on futures and derivative features rather than whether the suggestion was a suitable approach.

- 2** Whilst the return on the portfolio for the twelve months is a large negative return, this needs to be compared to the benchmark set for the manager and over a time period consistent with his brief i.e. 3 years. Over the twelve months referred to the US equity markets has fallen significantly e.g. the return on the S&P 500 index was — 27%. Thus, even over the short time period quoted, the manager's performance may not be poor relative to his benchmark index; indeed he may have outperformed his benchmark.

A claim against the manager may be justified if the fund has suffered a loss as a result of the manager not implementing his brief properly. However, this does not appear to be the case on the information provided.

To address the question fully we would need details of the brief set, the history of the returns achieved by the manager and details of the portfolio's construction overtime.

If the trustees were concerned about nominal returns on the portfolio then it would be appropriate to review the investment strategy.

Most candidates covered the obvious points but many were not able to identify what further information would be required and what issues needed to be looked at.

- 3 (i) The different characteristics of investments in offices and properties are summarised as:

	<i>Offices</i>	<i>Residential</i>
Unit Size	Available in very large units.	Relatively small units.
Type of tenant	Companies	Individuals, or companies at the luxury end of the market.
Security of rental income	Can be high if rent a small part of tenants' outgoing, improved if office is multi let.	Relatively higher risk as single tenant per unit.
Effect of political factors	Not that affected.	Historically more affected than other property sectors e.g. through rent controls and laws protecting tenants rights.
Sensitivity to level of economic activity	Sensitive to corporate spending but not directly to consumer spending.	Sensitive to factors effecting consumers disposable incomes although a falling housing market may see increased demand for rental accommodation.
Depreciation	Offices can become obsolete.	Whilst houses may need refurbishing they do not usually become obsolete.
Location	General location important but precise location within a general area is not critical.	Precise location may be critical.

- (ii) (a) Property is illiquid and hence there is a problem raising cash to pay the encashing investors. The forced sale of one of the fund's properties may harm the interests of the remaining investors.
- (b) The fund could maintain a high level of liquidity. The principle disadvantage of this option is that in anticipation of possible encashments, the fund's exposure to property is diluted and this will impact on the fund's return.

An alternative is to contractually impose a restriction saying large encashments will be delayed for a period e.g. 12 months, at the option of the manager of the fund. This enables the manager to sell properties in an orderly manner at a reasonable price. However, investors may be unhappy that they can't get their money back when they want.

Part (i) was bookwork and was well answered.

Reasonable attempts were made at (ii) although a number of candidates chose to ignore the information given in the question regarding derivatives.

- 4 By reducing interest rates the monetary authorities were seeking to stimulate consumer and corporate spending by making money cheaper to borrow and by reducing the attractiveness of short term savings.

Of concern to the authorities would be the risk of economic growth being too strong giving rise to inflationary pressures. This was not the case.

The yields on short dated bonds would be expected to fall in line with the cuts in short term rates by the authorities. The yields on long dated bonds would also be expected to fall provided investors were comfortable about the expected levels of future inflation.

The level of equity markets would be influenced by:

- the improved prospects for economic growth, if it was believed that the cuts in interest rates would stimulate growth
- the reduced level of bond yields resulting in an increased value for future corporate profits, and
- fluctuations in the equity risk premium

The first two factors would serve to increase the equity market, the latter factor would undermine this to a degree if investors saw an increased risk to equity investment.

Candidates could explain what governments were trying to achieve and covered most of the points with regard to short-dated securities but were poorer on long-dated and equity implications.

5
$$S = A \sum_{i=1}^n x_i (1 + R_i) - L,$$

where S is the surplus at the end of the period;
 A is the value of the assets at the start of the period;
 x_i is the proportion invested in security i ;
 R_i is the return on security i ;
 L is the projected value of the liabilities at the end of the period.

Mean-variance portfolio theory can then be applied to minimise the variance of the surplus for a given expected return, treating the liability as a negative asset.

In practice it will be necessary to decide how to place values on the liabilities and to determine, not only the expected value of the liability at the end of the period, but also its variance and covariances with the assets. One way of doing this is to use a stochastic asset liability model.

Candidates either knew this part of the course or did not. Those that did scored close to full marks.

- 6 (i) General references to how to set investment strategy and link of fixed liabilities to fixed assets
- Maturing schemes (longevity, closed to new entrants) generally has led to a secular trend to bonds
- Liabilities matched by bonds, particularly for international accounting standard
- Limited supply of government debt, lack of new issues anticipated, market tightly held at long end
- Companies issuing bonds in favour of equity, UK corporate market now bigger than gilt
- Utility companies issuing index-linked bonds
- Investors want to diversify
- Higher yield, limited credit risk
- Scope for active management from greater diversity of issues
- Could be self-investment driven
- Could be a match for bulk transfer
- (ii) The forecast strength of the economy during the term of the loan
- Corporate prospects, credit quality, during the term of the loan
- Marketability
- (iii) Floating charge over some or all of the assets of the company
- Fixed charge over a given asset in addition to ranking in a wind up
- Collateral provided
- Financial covenants e.g. income cover
- Prior ranking debt (e.g. subordinated debt will rank behind senior debt)
- Rights in a technical default
- Restrictions on further borrowing
- Parent co. guarantees (e.g. loan issued by a subsidiary)
- Third party guarantees (e.g. insurance credit wrap)

It was disappointing that candidates did not do well on this question. In part (i) many obvious points were missed while in (ii) only credit quality and marketability tended to be covered. Very few candidates got the point of (iii) which is extremely disappointing as this is an important facet of non-government bond valuation.

- 7 (i) Market may be distorted due to limited supply and excess demand from other investors. Investing in such securities may not be what a reasonable person would do given size of award. Claimant may expect earnings growth greater than prices.
- (ii) Current and future market structure dependent on supply more than demand from any individual or group of investors and has developed due to historical and political funding considerations. A low risk portfolio for an individual would produce a stream of income and capital payments that would leave them no worse off had the injury not occurred. Matched portfolio would have mixture of dates including very short.

- (iii) Tax, dealing costs and charges, cashflow needs, security, wealth enhancement — mix of cash, bonds, property and equity biased towards UK market. Could be individual shares but more likely to be collectives [301:16 — individual investment considerations].

Reasonable attempts were made at (i) and (ii) but in (iii) few comments were made about the factors that need to be considered. Most spent too much time commenting on appropriate asset allocation.

8 (i)
$$I(t) = K \frac{\sum_i w_i \frac{P_{i,t}}{P_{i,0}}}{\sum_i w_i}$$

where $I(t)$ is the capital index at time t ;
 $P_{i,t}$ is the price of the i th constituent at time t ;
 $P_{i,0}$ is the price of the i th constituent at time 0 — the last time at which there was a capital change;
 w_i is the weight applied to the i th constituent;
 K is a constant related to the starting value of the index at time 0.

- (ii) Removes strategic holdings, represents investable universe so more rational for index-tracking management.

(iii)
$$I(t) = \frac{\sum_i N_{i,t} P_{i,t}}{B(t)}$$

where $N_{i,t}$ is the number of shares issued for the i th constituent at time t ;
 $B(t)$ is the base value, or divisor, at time t .
 $B(t)$ is obtained from $B(t-1)$ through the chain-linking process.

- (iv) Formula assesses capital values only — it does not allow for income receivable either by time or amount. Different companies will have different distribution policies. Formula takes no account of the charges (management or dealing costs, commissions and duties) or taxes (income or capital gain) associated in running the client's portfolio. These could be significant if there are major changes in the makeup of the portfolio due to such events such as a change in assessment if the free float.

This was another bookwork question that was in the main well done.

9 Project risks and their mitigation

- Construction risk
- Power supply agreement with the paper mill
- Operating/ maintenance agreement with the project sponsor
- Residual value guarantee from a credit worthy entity
- Raw materials supply agreement (water, coal, gas, sludge etc.)
- Amount of equity
- Amount of subordinated debt
- Full project appraisal (incl. Identification and analysis of risks)
- Cash flow
- Liquidity account a minimum of 6 to 12 months interest
- EBITDA/ Interest cover
- Risk transfer to sub-contractors, raw material suppliers etc..
- Risk insurance — full all risks cover
- Risk sharing — potentially with the paper mill
- No dividends period

Loan terms and conditions

- Timing of the loan, pre or post construction
- Loan guarantee from the sponsor
- Loan guarantee from the builder during the construction period
- Term of loan — the power plant will have a very long useful life. As a lender your interest in the project is limited to the term of the loan. In this case, the sponsor is likely to have a contract to supply heat and power to the mill for a period of say 10 to 15 years. The sponsor is likely to ask for a loan term equal to the power supply agreement term.
- Restrictions on further borrowings
- Principal repayment schedule — likely to be as fast as the cash flows will allow for the first say three to five years. Decreasing the leverage in the special purpose company will allow the sponsor to refinance the loan at lower cost. It is unlikely that the sponsor will wish to repay the whole of the debt. Debt is less expensive than equity.

- Financial covenants — the main financial covenant will be a coverage such as EBITDA to interest expense ratio of at least 1.5. Lender may have rights to take control at this point. Also restrictions on further borrowing. Interest cover
- Fixed security over all assets

This question was poorly answered by most candidates. There was a tendency to write down all they knew about project management and not look at it in the context of the question posed. It was disappointing that the guidance in the question on what needed to be looked at was ignored.

- 10** (i) Classical — A company's profits are taxed twice: once in the hands of the company and once in the hands of the shareholder. The shareholder may be subject to tax on dividends and/or capital gains arising from increases in the share price.

Split-rate — Similar to the classical system excepting that different tax rates may be levied on retained profits and distributed profits. The system might be used in conjunction with a system that taxes investor's income and capital gains at different rates.

Imputation — A system designed to enable a company's profit to be taxed once rather than twice. Dividends paid from taxed profits are paid to shareholders together with a tax credit. The rules vary greatly and can be quite complex but it is often the case that the tax credit received is sufficient to offset the tax due on the net dividend. Also, lower taxed investors can often reclaim the tax credit.

- (ii) (a) All else equal under the imputation system dividends are taxed once. Retained profits lead to increased share prices and capital gains. Hence retained profits in an imputation system might be effectively taxed twice. The imputation system encourages dividends. Split-rate would be an alternative depending on the tax rates being levied.
- (b) The classical and potentially the split-rate systems are more likely to encourage retained profits and capital gains. Companies are more likely to grow and hence are more likely to become conglomerates.
- (c) All else equal the dividend imputation system should be most attractive to tax exempt investors as it potentially allows them to reclaim the tax paid by the company.

(Where different answers were possible marks were given for either solution)

Candidates scored well on this question in the main with most getting close to full marks on (i). There were mixed results on part (ii) tending to indicate that candidates may have learned the tax regimes but not fully understood them.

11 (i) Conventional Government Bond

Gross redemption yield = required risk free real yield + expected inflation + inflation risk premium

Property

Rental yield + expected growth in rents = required risk free real yield + expected inflation + property risk premium

(ii) Assumptions:

All investors want a real rate of return

All investors have the same time horizon for investment decisions

All investors have the same tax position

Reinvestment rates equal the expected total return from each asset

(iii) The theoretical relationship is a very long term one. Actual returns over a relatively short period often are different from those expected.

Many differences will relate to inaccurate estimation of the variables.

Short term changes in supply and demand etc. will cause markets to diverge from fair value.

Accrual of income and expenses can be difficult. The amount and timing of future rent reviews, major repairs etc.. is often unknown.

Property valuations are often done infrequently whereas bonds are valued in real time.

Reasonable attempts were made at part (i) but candidates did not score as well on (ii) missing out the time, tax and real return assumption points. Part (iii) also had mixed results.

12 (i) [Reference 301: Unit 10, section 2, 301:4:3.1, 17:1,3.7, 19:2,3] Need to construct a model of the company which allows future cashflows and earnings to be estimated. This will take account of management ability, quality of product, prospects for market growth, competition, input costs, retained profits, company, sector and market history. From this a share value can be derived using a discounted dividend model or sector price/earnings ratio. It is likely that the price range will be set lower than the most optimistic forecasts to encourage take-up by other investors

(ii) Financial accounts and accounting ratios, dividend and earnings cover, revenue and expenditure and so profit variability and growth, levels and structure of borrowings, levels of liquidity and lines of credit available, growth in asset values (which may be mainly intangible e.g. intellectual capital), comparative figures for other companies (similar in terms of market or stage of development), public statements made by the company and trade/press comment, listing information and criteria for the exchange on which the stock

is to be launched, opinions of company management, competitors, customers, suppliers and market analysts.

- (iii) [Reference Unit 10, section 3 and Unit 11] Economy or trade cycle may effect short-term market sentiment and so valuation of companies generally or specific. Liquidity in the market may be poor so investors need to be encouraged to switch out of existing holdings to fund purchase, particularly if there is a high level of new issuance generally. Improved investor sentiment if issue rises on opening (good for future business of bank). Avoids take up of stock underwritten so improves profitability of deal for the bank.

Another question where candidates failed to make use of all the information given to them, in this case that it was a 'first public offering'. Parts (i) and (ii) were marked together as many candidates made the comments expected in part (i) when answering (ii) and vice-versa. Part (iii) was not well answered.

13 The table below shows the results:

	<i>Fund Wt</i>	<i>Index Wt</i>	<i>Fund Return</i>	<i>Index Return</i>	<i>Asset Alloc</i>	<i>Sector</i>	<i>Total</i>
Equity	50.00%	60.00%	73.50%	59.19%	−0.89%	7.16%	6.26%
Fixed Interest	40.00%	20.00%	31.40%	34.71%	−3.11%	−1.33%	−4.43%
Index Linked	10.00%	20.00%	39.01%	38.96%	1.13%	0.01%	1.13%
Total	100.00%	100.00%	53.21%	50.25%	−2.87%	5.83%	2.96%

- (i) The fund has outperformed its benchmark by 3%, having returned 53% against the benchmark's 50%.
- (ii) Asset allocation gave a negative contribution of 3% whilst stock selection made a positive contribution of 6%. Over weighting fixed interest was a poor decision which was further compounded by poor stock selection in this sector. Equity asset allocation was negative but this was more than made up for by excellent stock selection. Under weighting index-linked also produced a positive contribution.

It was disappointing not to see logical application of theory in this question and many candidates obviously dived straight in to answering it without taking in all that was required. Many missed the point that there was no rebalancing. Arithmetical errors were not penalised but use of wrong formulae resulted in the loss of about one third of the marks being awarded.