

EXAMINATIONS

April 2004

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 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.

J Curtis
Chairman of the Board of Examiners

5 July 2004

The number of candidates was significantly higher than at previous examinations. This is likely due to the change in syllabus next year. Unfortunately many of the candidates who presented themselves were not well prepared as is evidenced by the high level of FB results at almost one third of the candidates who sat.

The examiners also have to apologise for setting a question that was not fully covered by core reading. Question 2 asked candidates to value a fund that had derivative contracts as part of its investments. Core reading does not cover contract sizes explicitly, this being covered in 401. As a consequence candidates were not able to value the derivatives. To offset this, the pass mark was reduced by 4 marks in effect excluding the question. However candidates who made an attempt at it gained marks for method and these were included in their overall marks. We received comments that the exchange rate had also not been given for £/€. The examiners believe that candidates should have a basic knowledge of current exchange rates for major currencies just as they would know current interest rates.

The solutions supplied should not be viewed as being totally comprehensive. Many questions, especially those involving bookwork, do have additional points for which marks were awarded.

In terms of each question the following comments will hopefully help candidates.

Q1. The examiners are looking for candidates to frame their answers to each part of the question, outlining specific points. Many answers are not well framed and appear to be 'brain dumps' rather than showing to the examiners that the candidate understands the topic.

Q2. This has been commented upon above. Showing method was worth up to 2.5 marks.

Q3. Part (i) was done well. In (ii), whilst the options were listed by many, the financial implications were not so well covered and cost candidates marks.

Q4. This question was in the main well answered. Where marks were lost it was normally for failing to articulate all aspects of monitoring.

Q5 & Q6. Both were well answered.

Q7. Candidates did not do well on this question mainly because they did not apply knowledge. Points were often listed that needed to be considered but solutions were not framed in relation to appropriate strategies for each type of portfolio. Part (d) was one of the best examples where candidates appeared not to believe that a family portfolio of \$70 million was large and framed answers in terms of assets and liabilities for a average individual client rather than for one for whom normal liabilities are likely to be a very small consideration. Part (e) was also not well done with protection of capital and income constraints seldom mentioned.

Q8. This question was poorly answered as candidates appeared not to think deeply enough about the issues raised especially for (iv). Part (i) was reasonably straightforward and answers reflected this. In (ii) answers failed to cover the wider implications whilst in (iii) explanations were weak on detail.

Q9. Part (i) was done reasonably well with candidates knowing the formulae and able to apply them. In (ii) candidates produced formulae but failed to explain them appearing to assume that the examiners knew the notation being used. We have discovered that the notation is used in ActEd tutorials and material. However it is not the same as that used in core reading and the examiners do not access ActEd material. We would council candidates to use either formulae that are fully outlined in core reading or preferably even when using such formulae to provide definitions. Answers to (iii) were mixed but those who scored well in (ii) tended to collect good marks for (iii).

In marking this question marks were awarded for method as much as correct answers. Thus showing how to calculate the first quarter's analysis earned about 65% of the available marks. Any arithmetic errors were taken into account in subsequent quarter calculations.

- 1** (i) The factors that should be considered when investing in a Domestic Government Bond are:

Interest rate risk
Reinvestment risk
Inflation risk
Yield curve risk

The interest rate risk and the reinvestment risk relate to changes in interest rates. If interest rates change then bond prices will move in the opposite direction, similarly if interest rates change then the rate on reinvested income will also change.

Inflation risk — unexpected inflation will result in the purchasing power of the payments received being reduced, it may also result in interest rates rising thus reducing the value of the bond.

Yield curve risk, if the shape of the yield curve changes then this might result in the price of the bond changing, changes in the shape of yield curve may be brought about by either changes in the supply or demand for bonds at differing maturity dates or by changes in the market's view of future interest rates.

- (ii) The additional factors which should be considered when investing in an emerging market Government Bond are:

Credit risk
 Default risk
 Spread risk
 Downgrade risk
Exchange rate risk
Liquidity risk
Political risk
Event risk
Inflation risk — CPI or RPI benchmark

While the above may also be pertinent to the Domestic Bond market, they are in the main likely to have negligible impact on the decision to invest.

Credit Risk — this can be divided into three separate headings:

- Default risk — this is the risk that the Government in question defaults on its obligations; this has occurred in the past either through economic collapse or a change of Government.
- Spread risk — this reflects the risk of default of the Government and represents the extra return an investor requires over treasury bonds to compensate them for the extra risk. This spread may change and result in either a profit or loss for the investor.
- Downgrade risk — if a rating agency such as S&P or Moodys downgrade a country's bonds then the price is likely to fall; these agencies will downgrade if they feel there is an increased chance of default. Equally they may upgrade a country's bonds if they feel that the country's economy has improved.

Exchange risk — this is simply the risk that the exchange rate between the investor's domestic currency and that of the emerging market will change thus resulting in a profit or loss on the bonds held.

Liquidity risk — this relates to the ability or inability of the investor to convert the bond into a known amount of cash at short notice. This ability may change over time and will depend on the size of the issue and its popularity.

Political risk — as mentioned previously there may be a change in Government and the new Government may be unwilling to honour the obligations of the previous Government regardless of its ability to pay.

Event risk — there are many events that may cause a country to default on its payments, a devastating earthquake or famine or floods may severely damage a country's economy, a revolution may bring to power a Government who no longer wants to honour its obligations.

Inflation — the reliability of the CPI/RPI may create an additional risk over normal inflation risk

- 2** UK FTSE short has value = $350 \times 10 \times 4225 \times 1.5 = (\text{€}22.2 \text{ million})$
UK Gilt long has value = $150 \times 100,000 \times 1.0611 \times 1.5 = \text{€}23.9 \text{ million}$
Total value portfolio = $750 + 650 + 150 - 22.2 + 23.9 = \text{€}1,551.7 \text{ million}$
Cash = 9.7%, Equities = 46.9% and bonds = 43.4%

3 (i) Offices

Leases are typically long-term, full repairs/insuring and have five year “upward only” rent reviews.

Wide range of prospective tenants in different industrial sectors and building often multi-let. This serves to control void risk and provides comparability when setting rent.

Location must be convenient for staff and customers but precise location not as important.

Rent will typically be a small proportion of the tenants' outgoings. Obsolescence can be a problem if pace of modernisation slips

Industrial

Precise proximity to labour and communications network is important.

Often industry/tenant specific leaving property vulnerable to rental void.

Can be built relatively quickly and cheaply.

Usage can mean more rapid obsolescence/deterioration.

Rent likely to be more significant part of tenants' outgoings.

On the whole, offices lowering yielding than industrial

(ii) Sale at reasonable price unlikely to be an option if rental dispute not resolved.

Similarly, redevelopment (given significant costs/further investment) very much a last resort option when other negotiated solutions have failed.

Option to accept the proposal (or a negotiated compromise) on the basis that not to do so could lead to rental void (tenant moves or goes out of business) and subsequent increase in management costs and fees.

Rental reduction could be agreed to alongside space reduction. Although industrial property is unlikely to be immediately useable by a new tenant, the offices could be sub-let.

Different levels of rental income cashflows can be discounted and compared with any potential sale proceeds.

Income should be adjusted for outgoings and management costs and assumptions made about potential future rent increases/decreases.

The discount rate is likely to be set by reference to bond yields adjusted for risk of void.

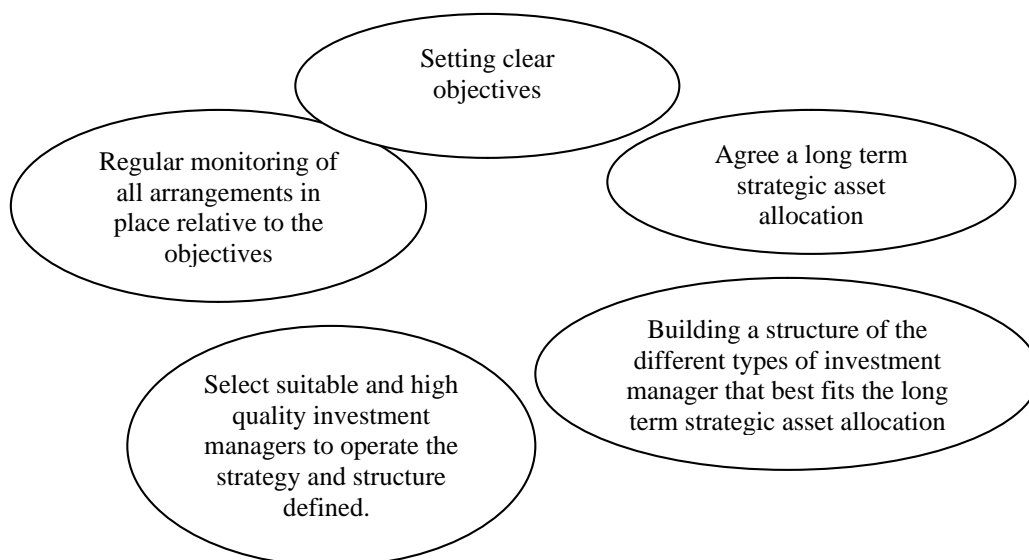
Potential splitting of tenancy likely to be positive move in terms of controlling risk.

Discussion with tenant on longer term viability of own business model given request for rent reduction is vital. Macro and micro economic analysis should be brought out in these discussions, particularly if new tenant likely to be required.

Local knowledge of property expert (supplemental to in-house team) likely to be helpful when discussing future rental levels and potential sale prices. Local comparisons will be required as well as national examples perhaps drawn from own portfolio.

Redevelopment option would have to be assessed in the first instance by reference to local property developments and/or own in-house resources.

- 4 (i) The diagram below represents the actuarial control cycle as applied to institutional investment arrangements.



- (ii) Monitoring should be focused on the different decision points in the cycle to ensure departures from targeted outcome identified and assessed.

This should incorporate regular assessment of whether objectives remain “right” for the current and expected future situation.

Specific areas to address include:

At the investment manager level: quarterly performance and risk monitoring
qualitative analysis on investment managers' staff capability and house
methodologies

At the manager structure level: analysis of suitable manager types
(value/growth, large/mid/small cap, active/passive) dialogue/judgement
required on whether overall balance still appropriate.

At the strategic level: risk assessment on degree of matching between assets
and liabilities and judgement/dialogue on whether still acceptable. Regular
pro-active assessment on whether there are new asset classes that should be
considered further.

- 5**
- (i) An OTC option is a privately negotiated derivative contract offered by dealers directly to end-users.
 - (ii) The exchange protects its credit exposure to participants in several ways.

Trades can only be cleared by members of the exchange with clearing status.
Clearing status involves authorisation, having certain minimum capital and
operational standards.

Institutional investors, corporates and individuals who wish to effect futures
transactions must have their trades cleared by members of the exchange with
clearing status.

Clearing members of the exchange must pass on at least the initial margin
requirement and the variation margin calls to their client. They can of course
pass on higher margin requirements.

The exchange imposes initial margin requirements on clearing firms (and
hence their clients) as part of the procedure of entering into a futures contract.

Typically, the initial margin requirement would provide the exchange with
sufficient capital (usually with 99.5% certainty) to weather an adverse price
movement in the futures contract in the event of a client/clearing member
defaulting.

The credit exposure of the client/clearing member to the exchange varies with
the value of the futures contract. E.g. where the client has a short futures
contract on the FTSE100 index and the index rises, the client's exposure to the
exchange via the clearing member increases.

Variation margin is also required where the initial margin falls below a
threshold specific to the contract. This provides collateral movement from the
client to the exchange that varies the credit exposure of the client/clearing
member to the exchange.

Price movement limits allow the exchange to suspend trading in a contract if its price moves up or down by more than set limits. Such limits allow the exchange to limit its credit exposure to clearing members/clients in the event of sudden moves in the price of the futures contract.

The margin requirements for speculators may be different to those for hedgers as speculators may not have the underlying assets to deliver.

Exchanges usually reserve the right to increase the margin requirements if they deem it fit.

- 6**
- (i) The general formula is from Unit 12.
 - (ii) Not all shares are freely available for purchase with some being held for long term strategic/business reasons.

Including these shares within an index can lead to distortions in the performance analysis, complications for index trackers and other problems.
 - (iii) Unweighted/ GDP weighted/ geometric would be acceptable. Appropriate formulae required.

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- (a) The investment objective is to create as large a fund as possible on retirement...
...although as retirement approaches some defence against the possibility of falling interest rates is also desirable.
So likely strategy would involve investment in equities (and possibly bonds as well for diversification), transferring into long-dated gilts as retirement approaches.
The key issues should centre around finding the optimum time to begin transferring...
...and how regularly to transfer...
...and in what proportions of the fund.
- (b) Being able to set competitive premiums can depend on achieving a good investment return on reserves...
...so the highest return is required...
...subject to risk of technical insolvency
...and maintaining adequate liquidity.
Investment strategy will be a diversified investment strategy using asset types permitted by solvency technical regulations.
The key issues should centre on producing probabilities of insolvency from various combinations of assets.

- (c) The shareholders will not want to see the money that has been raised invested in any risky investments as it has been raised for a clear function — for new product R&D...
...yet the company will want to work the money as hard as possible since some of it may not be spent for some time...
So the strategy is likely to entail investment in safe, short dated cash instruments.
The key issues should centre around the probability of capital loss...
...as more risky investments (e.g. corporate bonds) are considered in order to raise return
- (d) This portfolio is likely to have no liabilities, restrictions or objectives to concern itself with...
...other than to aim for a very well-diversified investment strategy...
...to deliver the highest possible return
It can consider investing in all asset types.
The key issues should centre around correlation between asset types...
...and the risk/return payoff of those asset types.
Absolute returns likely to be preferred.
- (e) Charities generally have capital that they wish to maintain...
...while aiming to pay their costs and do their charitable work from donations and the cash flow generated by the capital.
Hence investment in investment grade...
...bonds suggests itself as a basic strategy
The key modelling investigation should centre around the probability of capital loss as proportions of high income non-investment grade bonds and/or high income equities etc are added to the portfolio.

8

- (i) The overlapping periods are not independent (whereas non-overlapping periods are independent) and therefore lead to unreliable estimates of the 20-year mean return.

- (ii) The sample size (5 non-overlapping periods) is too small to use in the development of reliable estimates of future 20-year returns from equities.

The range of 20-year returns developed from the 5 independent 20-year periods is likely to understate the spread of returns that one might see from this market over 20-year time periods in the future.

It is quite possible that there could be 20-year periods in the future, which produce negative returns.

- (iii) expectations of future corporate profitability
value of those profits
real interest rates and inflation
perception of riskiness of equities
level of real economic growth

supply and demand
taxation
attractiveness of alternative investments

- (iv) Investors tend to diversify their equity portfolios across a number of major markets to reduce risk through lack of correlation.

20-year returns in other major developed markets were found by the researcher to be lower than in this market ...

... and if the volatility of returns is also higher

... then lower returns and higher volatility will increase the chances of negative returns over 20-year periods.

As the chances of positive returns over the long-term (20 years) look less likely in an international portfolio, equity returns look less and less attractive to the long-term (20-year time horizon) investor unless there is a significant reduction in the correlation of returns between the major developed markets in the future.

Investors may therefore wish to lower the equity content of their portfolios and replace equities by assets that have similar long-term returns as equities but which are uncorrelated to the returns of equities. This should reduce the volatility of portfolio returns without sacrificing return.

- 9** (i) Marks given for each formula and answer. This is straightforward application of Unit 22. MWR = 23.6%, TWR = 26.36%

- (ii) Q1.

	<i>Fund Wt</i>	<i>B'mark Wt</i>	<i>Ind Rtn</i>	<i>Fund Rtn</i>	<i>Asset</i>	<i>Stock</i>
Equities	800	60	10.00	(7.81)	1.52	(14.25)
Fixed Inc	200	40	(9.00)	(4.17)	2.28	0.97
Total	1000	100	2.40	(7.08)	3.80	(13.28)

Relative return is (9.48). Due to duration is $0.2 * ((-5.0) - (-9.0)) = 0.80$ and stock selection for bonds = $0.97 - 0.80 = 0.17$.

- (iii) Stock selection main contributor to performance; especially good in Q4
Asset allocation also contributed to the good performance
Duration principal contributor to fixed income performance
Other comments worth marks if valid

END OF EXAMINERS' REPORT