

EXAMINATIONS

September 1999

Subject 301 — Investment and Asset Management

EXAMINERS' REPORT

1 The control cycle has five elements.

The initial starting point is the general commercial and economic environment against which stocks are traded and valued.

In developing a solution consideration has to be given to alternative investment options (for example the mix of domestic and international equities), consideration of the liabilities and asset liability matching.

Risks — like solvency — need to be explored and consideration given to future solvency levels.

The solution involves devising a model using the tools available together with a professional approach to ensure that the model is based on sound thought and clear communication.

Once a model has been built it then has to be tested and the results fed back into the system to refine the problem and the solution. Close attention needs to be paid to those factors which caused the model to depart from its expected outcome.

2 (i) Investment trusts fall into the category of collective investment vehicles (CIVs) which are structures for the management of investments of a large number of relatively small investors delivering them a greater level of diversification than they could hope to achieve with their own resources.

An investment trust company is a public limited company which is normally quoted on a stock exchange.

Investment trusts have a Board of Directors which is responsible for the direction of the company and for ensuring the trust adheres to the investment mandate set out in the offer document to shareholders.

Investors participate in the investment performance of the underlying assets by purchasing shares in the investment trust. Investment trusts are closed-end CIVs as they are closed to new money. The shares in issue change hands on a stock market without new money being raised by the company.

An investment trust can be geared.

The price of the shares is loosely based on the net asset value of the investment trust's shares and is driven by supply and demand for the shares on the stock market on which the investment trust is listed. Investment trust shares normally trade at a discount to net asset value. Shares are bought from market makers in at the offer price and sold at the bid price; thus investors bear a bid/offer spread on purchases.

The investment managers are appointed by the Board of Directors, report to the Board and take the day-to-day investment decisions. The investment managers receive a fee for their services; usually a percentage of the assets under management.

The directors of the company receive directors' remuneration for their services.

- (ii) Open-ended investment companies (OEICs), cannot gear.

Unlike investment trusts OEICs are open ended; new shares are created when new money is invested and existing shares are cancelled when money is disinvested.

Unlike investment trusts OEICs always trade at net asset value.

Unlike investment trusts OEICs have; entry and exit charges are explicit.

OEICs can raise new tranches of capital, which attract different management fees to existing tranches.

Comment: Bookwork, but surprisingly poorly answered.

- 3** The clearing house is the central counterparty in futures transactions. When trades are agreed between participants in the pit or on-screens, the contract between the parties is novated (i.e. the clearing house becomes the buyer to every seller and the seller to every buyer).

Details of the trade are registered with the clearing house.

Each party to the trade has a contractual obligation to the clearing house.

In turn the clearing house guarantees performance of each side of the original trade.

This guarantee removes the credit risk of individual participants.

Each party must deposit collateral or a margin with the clearing house.

There are two types of margin, the initial margin and the variation margin; both margins serve to reduce the clearing house's credit exposure to the exchange participants.

- 4** Utilities are involved in the supply of continuously demanded services to households and business premises.

Demand is stable, as the services they provide are, in the main, essential.

They usually require an extensive physical infrastructure; this tends to make them capital intensive.

Most utility companies are natural monopolies.

They are usually tightly regulated and therefore prices are vulnerable to political risk.

They generally have low growth prospects; this leads to a high gross dividend yield.

Gearing is generally low.

They are largely dependent on the domestic market, although some companies are diversifying internationally.

- 5** Description of investment objectives as set out in the marketing material or offer documents. For example, if the offer documents specify active international equity fund management then the manager is expected to be an active investor in international equities.

Taxation; depending on the tax regime the fund may have to adjust its investment policy to minimise the impact of taxation on the return of the fund. For example, a fund that pays no tax on capital gains but tax on investment income may prefer low yielding high growth stocks.

Legal restrictions e.g. maximum percentage of the fund invested in any one stock or the maximum percentage of the market capitalisation of an individual stock that the CIV can hold.

Size of CIV; large CIVs need to hold a larger number of stocks than would say a private individual so as to avoid having a large percentage of the market capitalisation of an individual stock.

Peer group positioning; this is particularly important if the manager has to compete for funds in the market. The key risk for the manager and his clients is underperformance relative to the competitors.

The need to differentiate between exposure to an underlying market and the currency of that market and thereby introduce currency hedge strategies.

Cash flow — whether the vehicle is open-ended, and subject to cash inflow and outflow, or whether it is closed-ended with no cash flow.

Comment: appeared to give some candidates problems. This question was not about liabilities.

- 6** (i) A barometer index aims to track movements in the property market at large by estimating the full capital or rental values of a number of hypothetical rack-rented properties (e.g. local house prices).

Its main use is to highlight short term changes in the market level in terms of prices, rents and yields.

Portfolio based indices measure rental values, capital values or total returns of actual properties.

Since current rental income of these properties is fixed until the next rent reviews, response to movements in rental values will be sluggish. Capital value growth will be based on property valuations conducted periodically, because estimation of property value is expensive and there will be few transactions.

- (ii) A portfolio based index is based on an actual portfolio of properties. Results from different indices will depend on size, regional spread and sector mix of the individual properties included. So, it will be important to ensure that the index used is representative of the portfolio which you are measuring. Although, property is unique and portfolios of property are heterogeneous. Valuations will be carried out at different points of time, both for the index and for the portfolio being measured. Sales of many types of properties are not necessarily revealed to outside parties, so there are problems of obtaining price data. Rates of return for the indices will typically be money-weighted. This will be important if the portfolio being measured is subject to heavy cash flows.

7 Historic book value

This is the price originally paid for the asset

Written-up or written-down book value

Book value adjusted for changes since the date of purchase in accordance with some formula

Market value

May not be uniquely be defined; it can only be known with certainty when a sale takes place.

Smoothed market value

Market values can be smoothed by taking some form of average over a specified period to remove daily fluctuations

Discounted cash flow

Literally discounting the cash flows resulting from holding the asset and allowing for any residual value or loss on disposal.

Stochastic models

These are an extension of the discounted cash flow method in which future cash flows, interest rates or both are treated as random variables; the result of such a valuation is a distribution of values from which the expected value or other statistic can be determined

Expected utility

Instead of discounted cash flow, the utility of each possible outcome can be calculated in a stochastic model

Arbitrage value

This is calculated by replicating the investment with a combination of other investments and applying the condition that in an efficient market the values must be equal

Comment: Methods which were circular (e.g. depended on market price) were rejected.

- 8
- (i) Corporate bonds tend to have higher yields than the equivalent government bonds due to the higher risks of default and lower levels of liquidity.
 - (ii) The yield spread is expected to widen due to greater fears of bankruptcies for corporates.
 - (iii) Government bond yields will probably be very low, and thus with a stable economic background, the yield spread is likely to narrow as investors reduce their risk premia in the chase for higher yields
- 9
- A forest is a hybrid between a property and an equity. It is a “real asset”. Many property features apply, but some areas (e.g. volatility of yield) are more similar to equities. Features are:
Marketability — there will be substantial cost involved in buying and selling so this is likely to be a long term holding.

Unit size — the cost of a forest will be substantial, and the number of potential forests (if buying) or of purchasers (if selling) will not be great.

Location will be critically important. A forest only has investment potential for its income producing potential. At some stage, this means felling the trees and selling the timber. It is therefore important that the timber is accessible and that there is sufficient demand "locally".

Uniqueness — there is a uniqueness factor. Features which influence this uniqueness will be the quality and type of timber, demand for the type of timber, the age of the trees, their appropriateness for harvesting, etc.

Yield and security of income — the forest's yield potential will depend on the ability to harvest the timber (depends on age of various sections of the forest), the cost of harvesting and bringing the timber to its market, the demand for the timber, and the volatility of that demand.

Demand will also depend on the range of uses — e.g. housing or other construction demand, and the competing courses of supply (not necessarily timber).

Exposure to economic influence — e.g. demand, particularly construction, which is very cyclical and which is a heavy user of timber.

Expense of maintenance — a forest will require looking after. Access routes need to be maintained, the forest need to be looked after to prevent disease, harvesting will cost money, and the felled timber needs to be prepared for transport, or brought to market.

Investment characteristics can be changed by the owner, e.g. it might be possible to do so by introducing new types of trees which can alter (over the longer term) the quality and type of timber and the speed of harvesting.

There may be risks attached, environmental, legal or political.

Comment: Rather poorly answered. Many candidates failed to appreciate that this investment had many property characteristics.

10 The fund manager only has to *track* the performance of the index.

So replicating the index is not essential.

Investing in many stocks and so having relatively small individual holdings in each stock will result in high dealing costs (necessary each time the relative sector weightings change) that will reduce the performance of the fund and so cause underperformance relative to the index.

Research has shown that, after overall market movements have been taken into consideration, the share price movements of companies within industrial groupings tends to correlate more closely with each other than with companies in other industries, so holding three instead of fifteen may well replicate the performance of the sector.

The share price movements reflect the changes that have occurred in the operating environment, and such changes affect companies in the same industries in similar ways.

The specific sector may only represent a small percentage of the index and within that sector the three stocks the manager proposes to use may represent a substantial proportion of the total market capitalisation of the sector.

Stratified sampling of the performance of this sector may have shown that the performance of the three stocks in question is a very accurate measure of the performance of the sector as a whole.

Sampling may enable the fund to choose its timing in addressing whether or when to replicate changes to the underlying index.

Comment: Surprisingly many candidates thought that the index fund would structure its holdings sampling in order to outperform.

11 The first issue is how to match the median manager's holding in property.

Could hold property shares or units in a property unit trust as a proxy for property.

Or could hold a mix of equities and bonds on the basis that the return on property is expected to be somewhere between the two.

Then there is the question of matching asset allocation within each asset class listed in the question;
for example one must decide if, and then how, to distribute assets by sector within the UK Equity asset class.

One option is not to try, and instead seek to add value by sector selection, but this goes against the marketing statement so must be rejected.

The best method is to match a suitable index weighting by sector within each asset class;
for example, the assets in the UK Equity class can be distributed by sector in line with the FTSE-All Share Index sector weightings.

Another issue is that there may be a time lag between the end of the quarter and the date that the quarterly data is published.

Hence the information that the investment manager has available to rebalance the portfolio at the end of each quarter may already be out of date.

The difficulty is twofold.

First, other managers, who are seeking to add value by asset class allocation, may alter their asset class allocation at some point during the quarter. Clearly this alters the median manager asset class allocation, but the investment

manager has no knowledge of this until seeing the published data at the end of the quarter.

If enough managers do this then the change could be substantial.

There is no easy way to deal with this; the investment manager could look to see if there are any surveys done on asset allocation say, monthly, but these may not be reliable.

It is inevitable that part of the investment performance relative to the benchmark will be explained by difference in asset allocation although these should be evenly distributed between positive and negative effects and over a longer period should average zero. Secondly, if the unitised fund either outperforms or underperforms relative to that asset class because of superior/inferior stock selection, then it will be respectively overweight or underweight in that asset class.

The best way of dealing with this is to use new money coming into the fund (or withdrawals from the fund) to rebalance.

When rebalancing, the cost of dealing needs to be considered, which could act as a drag on performance if it is too high.

Comment: The most poorly answered question. Again, this question was not about liabilities. Candidates' greatest problem was failure to answer the question asked, which related to meeting the marketing claims of the fund. Instead, they largely treated this as a question on property. The property aspects of the solution commanded few marks.

12 (i)

(a) There are five steps:

Make a high-level preliminary risk analysis to confirm that the project does not obviously have such a high risk profile that it is not worth analysing further.

Hold a brainstorming session of project experts, senior internal staff at the company and external mining investment experts who are used to thinking strategically about the long-term.

The aim is to identify project risks that are both likely and unlikely, to discuss these risks and their interdependency, to attempt to place a broad initial evaluation on each risk, both for frequency of occurrence and probable consequences if it were to occur and to generate initial mitigation options and discuss them briefly.

Carry out a desktop analysis to supplement the results from the brainstorming session, by identifying further risks and mitigation options using a general risk matrix, researching similar projects undertaken by the sponsors or others in the past and obtaining the

considered opinion of experts who are familiar with the details of the project and the outline plans for financing it.

Carefully set out all the identified risks in a risk register with cross reference to other risks where there is interdependency.

Ensuring that upside risks as well as downside risks are covered.

- (b) List of risks (not exhaustive — other risks are acceptable too) words in bold represent a broad categorisation of the risks identified:
- Perhaps the biggest risk is that the mine will be expropriated by the government of the third world country after the company has invested in developing the mine. **Political**
 - The government may impose/increase taxes on the output of mine or increase its annual fee for the licence to work the mine. The company is in a very weak negotiating position once it has invested in the mining operation — it may be better to pay increased taxes/licence fees than pull out of the country. **Political/Financial**
 - The world market price of copper might fall from its present levels reducing the overall payback from the project and increasing the time to discounted break-even between initial investment and the future cashflows. **Economic**
 - The mine could flood, be covered in by a mud slide or be prevented from operating as a result of some other natural disaster. **Natural**
 - A part of the output from the mine may be mis-appropriated or stolen either at the mine or in transit to the world market. **Crime**
 - The initial reports on the quality of the mine's ore may prove to be incorrect so that the costs of exploitation are higher than originally anticipated. **Business**
 - It may not be as easy as was first envisaged to recruit suitable local labour, put together the infrastructure to exploit the mine and move the output to a port for shipment to the world market. **Project**
- (ii) The purpose of risk analysis is to ascertain the frequency of occurrence and the consequences if the risk event occurs.

The analysis should concentrate on independent risks.

A guide to frequency of occurrence can usually be got from experts in each risk. The analysis should be supplemented by a study of the available statistics.

The financial consequences of the event should be expressed in terms of present-day money values. They may consist of a range of possible

values. A mid point or a probability distribution could be used for further analysis.

The expected NPV of a risk occurring in a future year can be obtained by multiplying the probability of occurrence in that year by the NPV of the incremental impact on the cash flows of the project if the event were to occur in that year.

Risks should then be prioritised for further analysis. Risks with low NPVs may be discarded by allowing for them in a general contingency. Risks with high NPVs and risks which would be disastrous but which have low probabilities of occurrence should be retained for further analysis.

Comment: Well answered.

- 13** (i) The main problems in moving monies between markets for both long and short term switches are as follows:
- the costs (commission, bid-offer spread, purchase taxes, etc.) in switching between markets and reversing the switch within a few months can be significant
 - short term switches may upset a strategic profile of stocks in a market
 - the operational aspects of carrying out a decision can be slow with the consequent loss of some of the benefits of the decision
 - the back office may be over stretched leading to a higher risk of errors if several stocks are being bought and sold at once
 - lack of liquidity and depth in the underlying markets can reduce flexibility
 - the taxation impact of selling shares which have shown significant appreciation in price may be unacceptable in terms of cost
 - For a short term switch, bid/offer spreads, commissions and any lack of liquidity and depth will cost the manager four-fold in a round trip between two markets.
- (ii) Using stock index futures the manager can adjust and subsequently re-adjust the portfolio's exposure between the two markets at a significantly lower cost.

No tax is crystallised on equity capital gains and the long term profile of the fund remains intact.

The investment decision can be executed immediately to catch all the anticipated movements in both markets whereas some of the benefits of the decision could be lost because of the time taken to process sales in the underlying stocks in the relevant markets.

In the case of a short term switch there would be of the order of four contract notes to be processed for each stock in one of the markets (assuming say 25 stocks are held in each market this would run to 100 contract notes to be processed); using index futures only four contract notes need to be processed.

Futures markets are often more liquid than the market in the underlying stocks so it is possible to deal in size without moving the market. Stock index futures avoid the need to trade the underlying stocks and thereby avoid the movement in the market prices of stock associated with trading large volumes.

In a very large investment house it may be virtually impossible to make substantial asset allocation switches without the use of futures.

For a long term switch between markets, stock index futures can also be very useful.

The switch can be achieved by selling stock index futures in the market the manager wishes to reduce his exposure to (say the US) and buying stock index futures in the market to which the manager wished to increase his exposure (say the UK).

With this strategy, the manager is protected from falls in the US market because losses on the underlying securities are made up by gains on the short position.

Gains on the UK market accrue to the fund through the long futures position.

Having locked in his strategic asset profile the manager can now comfortably proceed with stock switching and unwind the futures positions appropriately as he proceeds. The fact that the manager does not have to sell large volumes of stock quickly, should allow the manager to do individual stock deals on more advantageous terms.

This strategy allows the manager to ensure he locks in his long term view without losing the market opportunity while trying to fine tune his stock selection and switching process.

As equity transactions are spread over a longer time period the pressure on the back office is reduced.

Comment: Reasonably well answered, although it did differentiate candidates.