EXAMINATIONS

April 2000

Subject 301 — Investment

EXAMINERS' REPORT

Overall, this might be described as a relatively "normal" examination in terms of the range and quality of candidates' responses. Bookmark questions fell into two categories – those where candidates largely obtained near full marks, and those where many candidates gained only half marks, due to the incompleteness of their answers. As a consequence, the major determinant of success for many individuals was the quality of their answers to those questions that examined higher level skills. Detailed comments are as follows:

1 (i) *Although question says list, marks should only be awarded for stating the advantage, e.g. "gearing" is not an advantage – the advantage is that it enables outperformance when the market is rising. Marks attribution. Alternatives in the last bullet only count once.*

- The gearing of investment trusts should enable them to outperform unit trusts in bull markets.
- Investment trust schemes may be bought at a discount to net asset value and if the discount narrows this should be a source of outperformance relative to unit trusts.
- Investment trust can provide equivalent income stream at a discount.
- Investment trust management charges are usually lower than for unit trust.
- Investment trusts can invest in a wider range of assets than unit trusts.
- Investment trusts may have a better tax position than unit trusts.
- An investment trust is not required to hold cash for liquidity to satisfy redemptions (OR is not obliged to buy or sell at potentially unattractive prices just because of cash inflow or outflow).

(ii) The discount to net asset value per share is defined as:

$$\frac{\text{net asset value} - \text{market price}}{\text{net asset value}}$$

expressed as a %age.

This may become a premium because:

(a) the value of assets may be historic and due for re-rating,

(b) investors in the trust may be barred from direct entry to the markets in which the trust is invested and they may be prepared to pay premium in order to gain the exposure they desire,

(c) investors in the trust may anticipate the trust management adding value on top of the current market prices of the trusts investments,

(d) the sector covered by the trust may suddenly become fashionable and the trust rise in price as a consequence.

Q1 A straight-forward question and generally well handled. Many candidates failed to gain full marks because they answered part (i) with a list of words rather than including a brief explanation of each advantage.

2 (i) The investment characteristics

- real asset expected to provide a hedge against unanticipated inflation;
- a running yield typically between that available on equities and bonds;
- rental income subject to infrequent rent reviews, which may be upwards only;
- very unmarketable;
- high dealing costs;
- security of income depends on the quality of the tenant;
- susceptible to Government controls;
- buildings suffer from obsolescence but land always likely to have some value;
- unit size is large;
- each property is unique;
- no central market with quoted property prices
- valuation is a matter of professional judgement
- investment characteristics can be changed by the owner/marriage value.

In comparison with index linked Government bonds, property is less marketable, less secure and more expensive to manage. Investors would therefore be expected to require a higher return from property.

(ii) Relative to office properties, generally, industrial properties;

- are cheaper and quicker to build which limits rental growth;
- become obsolete more quickly because they are more vulnerable to deterioration and so have higher depreciation costs as a percentage of the total value;
- are harder to re-let because of specific use:
- have a higher content of land value within price;
- are more vulnerable to economic recession.

For these reasons, industrial properties would generally be expected to provide a higher yield than offices. In a low inflation environment,

interest rates would also be expected to be low.
Rent increases will be difficult to implement, unless properties are in areas of high demand.
Although broad economic conditions may be favourable, deflationary problems may cause difficulties for some tenants or particular sectors, leading to voids.
For property companies with gearing, the cost of servicing debt is likely to be relatively low although the differential between the interest rates paid by higher quality and lower quality borrowers may be wide.

Q2 Parts (i) and (ii) were generally well answered with several candidates gaining full marks. The answers to part (iii) were generally disappointing.

The question asked candidates to consider the difference in performance in a low inflation environment. Many candidates gave reasons which did not directly relate to this environment. The correct way to approach the question was to assume that the overall performance of the two companies would have been broadly equal in a normal inflationary environment. Hence, candidates were being asked to explain the factors which might be expected to produce differential performance in a low inflationary environment.

3 (i) Practicality

- factors affecting one company in an industry are likely to be relevant to other companies in that industry
- much of the information for companies in the same industry will come from a common source, and will be presented in the same way
- no analyst can expect to become an expert in all areas, so specialisation is appropriate
- the grouping of equities by a common factor adds structure to decision-making. It assists portfolio classification and management

Correlation of Performance

- Research shows that the share price movements of companies within the same sector are more closely correlated with each other than with companies in other sectors
- The price movements reflect the changes which have occurred in the operating environment of companies in the same sector.

(ii) By comparing the portfolios with each other, these analyses identify the consistency of the company's management of the portfolios.

The analyses will also identify style biases (e.g. growth or value characteristics) in the portfolios, relative to the index.

They will also identify how risky the portfolios are relative the index.

If conducted over time, they will also show how stable is the style of management of the company.

Q3 Part (i) was straight-forward and well answered. Part (ii) was a practical question requiring candidates to consider the analysis being undertaken and how it might be used by the company. The hint to the answer is contained in the earlier part of the question. The bulk of the answer to part (i) is concerned with consistency of approach. The answer to part (ii) is also concerned with consistency of approach over time and relative to the index.

4 (i) The Beta of a portfolio is a measure of the portfolio's volatility relative to movements in the whole market. It is usually defined as the covariance of the return on the portfolio with the return on the market, divided by the variance of the market return.

A beta of 1.2 means the change in value of the portfolio should be 20% greater than the change in value of the market.

(ii)

The performance of the portfolio would be compared to the return on the index. The portfolio's target return should recognise the pre specified level of risk. Using an index representative of the market the portfolio is invested in, target returns could be calculated on 1.2x the index return. Quarterly returns for the portfolio could be compared to the quarterly returns on the target over, say, a five year period. The excess return would indicate the level of value added by the manager.

(iii)

- The performance will differ because the portfolio will be unlikely to hold stocks and sectors in weights which are wholly representative of the index.
- the portfolio's beta over the period may have varied to levels significantly above or below 1.2 affecting returns
- the portfolio may have other objectives/constraints which effect performance.
- The diversification (or lack of it) may affect volatility of portfolio returns;
- the volume and dealing cost impact of trades in the portfolio
- the effects of cash flow

- the impact of tax
- the effects of expenses

Q4 The definition of beta was known by almost all candidates. In part (ii) a large minority of candidates failed to record that the target returns should be calculated as 1.2 times the market index return. The value added by the manager would be calculated by comparing actual returns with target returns. A worrying number of candidates included the Economic Value Added formula in their response. EVA is a ratio used to measure the underlying profitability of a company. It is irrelevant for an equity fund. Part (iii) was reasonably well handled.

5 (i) An American option is one that can be exercised on any date before expiry. A European option can only be exercised at expiry. Assuming all the other terms and conditions of the two options are identical, the American option will have the greater market price. Its value includes scenarios which can profitably be exercised prior to expiry, as well as at expiry.

(ii) A futures contract places an obligation on the buyer to buy/the seller to sell, an asset on an agreed basis in the future. For an option contract, the buyer of the contract has the right to buy/sell (depending on whether the option is a call or put) an asset on an agreed basis in the future. The seller of the contract must sell/buy the asset if the purchaser of the option so elects. Under the futures contract the asset will change hands unless the option is closed out.

(iii) Delivery is the settlement process in the futures markets. Most positions in exchange traded futures are closed out before delivery by taking an opposite position as this is a simpler process than making or taking delivery. The counter party to each futures position is the exchange's clearing house. The buyer of futures contract can close out his position by selling an equivalent contract and thereby reducing his net position with the clearing house to nil. Without the exchange's clearing house, delivery could only be avoided by dealing direct with the original party with whom the position was opened.

(iv) Each counterparty faces two kinds of risk – Market Risk and Credit Risk.

Market risk is the risk that market conditions will change, so that the present value of the net outgo under the agreement increases. The market maker will often attempt to hedge market risk by entering into an offsetting agreement.

Credit risk is the risk that the other counterparty will default on its payments. This will only occur if the swap has a negative value to the defaulting party so the risk is not the same as the risk that the counterparty would default on a loan of comparable maturity. Credit risk can be mitigated by evaluating and monitoring the creditworthiness of the counterparty, and to seek deposit back margining arrangements to limit the degree of exposure.

Q5 A straight-forward book work question with many candidates scoring high marks. Many did however demonstrate that they remained somewhat confused by the mechanics of exchange traded futures and options. Future candidates may find it helpful to think through in advance of the examination the cash flows and contracts/ obligations entered into at purchase, during the time over which the contract is held and at the time the contract is closed/ sold/ expired. For example, many candidates failed to appreciate the consequence of margin calls at the expiry of an exchange traded cash settled futures contract.

6 *This answer is more fully developed than would be expected of a candidate. However, the question does ask candidates to describe and not merely list the improvements, so they have to show how the proposal will improve return. The question states this is a fixed interest unit trust, and so an unqualified proposal to invest in equities is not an acceptable improvement - see last bullet.*

- Benchmark to bond indices. Whilst not directly designed to improve performance, investing in securities which are designed to produce average performance when compared with the competition should indirectly ensure that the returns are never far from average. Internal expense savings might allow you to reduce charges to unit holders thereby improving overall return to unit holders.

- Investing in listed corporate bonds. The yield will be higher than government securities of comparative term reflecting the additional credit risk, reduced marketability and any special terms and conditions.

- Investing in longer term securities in a positive yield curve environment. Obviously this strategy carries risks should interest rates rise. However, all else being equal, when your view of future movements in the yield curve is neutral, longer dated securities offer a higher yield in a positive yield curve environment.

- Trading securities in a positive yield curve environment as their term to maturity reduces. Similar point to item 4 above. Having invested in the longer dated securities, they should be sold from time to time as they reduce in term in a positive yield curve environment. The capital gain from the sale allows the trust to pick up a further increase in yield providing the proceeds can then be reinvested in the then longer dated securities.

- Ensuring that investment is not made into stocks which are particularly attractive to other types of investors. Some types of investors e.g. individuals and/or foreign investors will bid up the price of a bond as to them it is more attractive generally for tax reasons. It could also be relatively more attractive for regulatory reasons. There is little point in investing in these bonds if other bonds with suitable terms and conditions are available to you.

- Anomaly switching refers to monitoring a full range of potential investments and continuously comparing their prices. In so doing it may be possible to identify investments which appear relatively cheap and for which no explanation can be found. These investments could be purchased in the belief that their price will correct to previous relative levels.

- Policy switching refers to anticipating future changes in the shape of the yield curve. Policy switching can be extremely profitable if the market is correctly anticipated.

- Investing in asset backed securities. Similar to investing in corporate bonds. Also similar is investing in local authority bonds, except that many people believe that local government authorities are extremely unlikely to default on their borrowings as they have a certain amount of government backing and they have tax raising powers.

- Underwriting new issues for a fee can be attractive if the trust is happy to hold the issue being underwritten. Markets can move quickly and it can happen that pricing will change significantly from the time of underwriting to the time of issue. Hence there is the risk of not being able to sell on the investment.

  Investing in convertibles or preference shares, if the objective of the trust grants permission to do so.

Q6 The question was generally well answered.

7 *This is a practical question – there are marks for what needs to be done and marks for the precise timing of when things happen. This is about how the portfolio is changed, not how the index is calculated. There are no derivative solutions!*

Essentially the fund will offer index tracking with its current portfolio up to the close of business on the day before the merged company forms part of the index.

In order to maintain the index tracking, the manager has to buy the additional index weight (i.e. 2.5% of the value of the fund) in the stock

at its index opening price on the first day when it comprises 6% of the fund.

At the same time, the manager has to dispose of the stocks which no longer comprise the 2.5% of the index which the merged company now occupies.

These disposals also need to take place at market opening prices, in order to match the index movement.

Q7 *The question was apparently fully understood by almost all candidates with most candidates realising that the index fund manager must buy additional shares in the local company and hence sell shares in the correct proportions in the other companies making up the index. However, most candidates failed to secure full marks as they failed to describe the critically important timing of events necessary to track the index.*

8 (i) The financial markets of all developed economies are regulated to a greater or lesser extent. The principal aims of the regulation are most likely to be:

1. To maintain confidence in the financial system
2. To protect consumers of financial products
3. To promote efficient and orderly markets

(ii) A self-regulatory system is organised and operated by the industry participants without government intervention.

A statutory system is one in which the government sets out the rules and polices them.

The main differences between a self-regulatory system and a statutory system are as shown below:

1. Public Confidence – A Statutory system is less open to abuse by industry participants and may command a higher degree of public confidence. In a self-regulatory system, the closeness of the regulator and the firms and individuals it is regulating could lead the regulator to regulating in favour of the industry. Even if this were not actually so, the public might believe it to be so and thereby undermining one of the principal aims of regulation, namely, the promotion of public confidence in the financial system.

2. The direct and indirect costs of Regulation – In a self-regulatory system the regulators are made up of industry participants. As such they will have the best incentive to operate the system so as to minimise the costs of regulation. The statutory system includes independent regulators who do not have this direct incentive.

3. Flexibility – Regulators in a self-regulatory system should be much more quickly aware of the need to change regulation to suit changes in the markets.

4. Enforceability – A Statutory system is more easily enforceable. It includes legal recourse. Under a self-regulatory system, a firm or individual might expelled but there will be no legal compulsion for that firm or individual to cease trading.

5. Market Knowledge – It is likely that the regulators in a self-regulatory system will have the greatest knowledge of the market. It is contended that these regulators are more likely to introduce rules and systems which work as intended.

6. Relationships with the Regulator – For any system to function it is important that the firms and individuals co-operate with the regulator. It may be easier for market participants and the regulator to co-operate in a self-regulatory system as compared with a wholly independent regulator under a statutory system.

Q8 A straight-forward book work question with many candidates scoring full marks.

9 (i) The four accrued liability aspects to be considered when determining investment strategy are:

- nature of the liabilities;
- currency of the liabilities;
- term of the liabilities;
- the level of uncertainty, in timing and amount, of the liabilities.

[Not required part of answer] → By definition, the matching strategy will most closely (as is practicable) match the liabilities by nature, currency and term. It would also respond as well as is possible to the uncertainty in the liabilities.

(ii) The covariance of the return for an individual investment with the return on the portfolio indicates to what degree the two move in synch. If there is a low covariance then the investment would have attraction as a diversifier for the portfolio as its inclusion in the portfolio would reduce the overall risk (i.e. volatility of return) of the portfolio, subject to how volatile the investment return is for the individual investment.

(iii) (a) *The answer to (iii)(a) has to refer to each of the 4 bullet points in part (i) and address those points. Sample solution below gives idea of type of answer expected and level of marks to be gained. NOTE – following discussion at Examiners' Review Meeting we felt previous answer needed re-focussed as shown below.*

Require to determine the nature of the liabilities. Are they real, how do they relate to inflation? What is their amount? What is the couple' lifestyle and outgoings, e.g. mortgage interest or capital repayments ? Are there any other sources of income, e.g. the director might undertake consultancy within the business.

Are the liabilities denominated in the domestic currency.

What life expectancy can be assumed? Is the term be limited by a factor depending on expectation of joint life. Do the two disabilities impact on this?

What other aspects might affect the uncertainty concerning the assets, e.g. cost escalation of healthcare and support may not be pure RPI, may need periodic capital drawdown for medical needs, etc. What is the likely pattern of costs, e.g. does it escalate with age? Can the residence be sold, a last resort, when full time residential care is needed?

Is there a continuous need for disinvestment?

(b) *There are a wide range of potential answers to this question. My interpretation of "Propose" means examine possibilities and explain your reasoning. The main elements and marks are as follows (other answers possible)*

There is a sufficient amount of funds to provide a mix of assets, which can be tailored into the liability needs. Need to think about some ready income, some stable income sources and some real assets to provide growth of value for likely escalating income needs.

Among asset classes, would conventionally think of cash, property, fixed interest and index linked bonds, UK and overseas equity.

Might also consider impaired life annuity or long term care product.

Conventional fixed interest will provide a high level of income to provide for living expenses, but capital will be protected in nominal terms only.

Index linked will provide some protection against inflation (though maybe not health care cost inflation).

Equities will provide the only likely means of providing escalation of capital values at a rate which keeps pace with cost of care. However, capital values of equities are volatile and there is a continuing need for disinvestment. A degree of overseas investment will diversify risk, subject to introduction of currency volatility.

Property is unsuitable – inadequate spread, already exposed through existing residence.

Cash is required to avoid steady liquidation of investments.

A suitable mix might be (other answers acceptable)

Domestic Equities	30-40%	
International Equities	15-25%	Total Equities 45-65%
Fixed Interest	20-35%	
Index Linked	0-10%	
Cash	5-10%	

Re-balance periodically to maintain broad proportions and review mix over time as conditions change.

Q9 Part (i) was well handled

The responses to parts (ii) and (iii) were overall disappointing. Many candidates simply provided a virtually generic information list without regard to the specific circumstances of the question. Candidates were awarded full marks if they categorised their information list by the four factors noted in part (i) and if the information requested was relevant to the circumstances.

Turning to part (iii) most candidates appreciated that the couple concerned may well have relatively heavy requirements for cash and that some investment in assets offering protection from inflation was required to defray increasing health care costs. High marks were awarded to candidates who also appreciated that for so long as the couple remained alive, health care costs were likely to escalate considerably in advance of inflation as their collective health deteriorated.

10 (i) *The answer has to address the realistic problem. Unreasonable to expect company prospects to have improved so that dividend doubles and not expect share price to react positively as well. Note question also says yield = 2 * market yield; this is not a dot.com doubling an insignificant dividend.*

If the dividend yield has doubled, then either the dividend has been substantially increased or the share price has fallen dramatically, or a combination of these factors.

If the dividend has been increased substantially, then one would expect the share price to have risen as well, which would tend to reduce the yield. This would imply that the dividend increase would likely have been accompanied by a statement concerning a change in dividend policy, for example an increase in the payout ratio or a special dividend, i.e. a one off event.

The share price may have dropped dramatically due to a profits warning or a results statement. There may be fears of a dividend cut.

May be an unfashionable second tier share subject to persistent selling but nothing fundamentally wrong.

(ii) ***Accounting ratios need to be relevant.*** Choose from Payout ratio or dividend cover or income cover – to check sustainability of dividend

Net asset value – to check whether share good value at this price.

PER is acceptable if it is qualified as a monitoring of the trend in PER over time.

Q10 The question was generally satisfactorily answered. Many candidates could easily have scored higher if they had included an explanation of the relevance of the ratios given to the specific circumstances of the share.

11 This is a question about the prospective view of the suitability of the alternative options and how they relate to the liabilities of the pension fund. The portfolios are tracking portfolios so performance in-line with benchmark is assumed.

You have not been asked to consider the absolute levels of the market, only the reallocation. All else held equal, the funds should be rebalanced from time to time in accordance with the asset allocation strategy adopted for the pension fund.

The extent and timing of the rebalancing depends on the estimates of near and mid term expected total returns of each tracker fund.

The near to mid term future expected capital growth for each tracker fund should be calculated using simple fundamental relationships for the companies making up the index in each country. These relationships might be based on, for example, the price/earnings ratio, the dividend yield and for non-financial companies, the ratio of stock-market value to net worth. When added to dividend yield estimates, calculations such as this help the investor to decide the near to mid term expected total return from each market.

Given estimates of future total return, the overseas market can be considered relatively cheap if:

Expected return in local currency + expected depreciation of home currency > expected return in home country

The near to mid term expected returns of the funds and the value of diversification are the two key factors to consider in the extent and timing of the rebalancing decision. Other issues to consider are as follows:

(i) The current equity allocations of other comparable institutional investors should be reviewed. [The trustees may consider that it is a desirable constraint that performance be not too far away from that of other comparable funds].

(ii) Net returns from overseas investment can be different because of global market inefficiencies including taxation and regulatory frictions. [For example, irrecoverable taxes and withholding taxes, if any, must be considered as a cost which might otherwise be avoided or delayed. This is not likely to be the case here because both countries are major and well developed countries].

(iii) Mismatching of assets and liabilities by country for the overseas tracking fund investment is a relatively minor risk if the liabilities are long term and real in nature. [It is not necessary to consider additional currency hedges. Real liabilities can be approximately matched by real investments in a different currency. The linkage between inflation and exchange rates described by the purchasing power parity theory reduces the long term exchange rate risk for real investments.]

(iv) Cash flow from the two funds is unlikely to be significantly different but should be reviewed in line with the cash flow needs of the pension fund.

(v) Depending on the size of the holding and the actual arrangements with the tracking funds, there may be some albeit remote possibility of shifting market prices (both on the sale of the existing portfolio and on the purchase of the new assets).

(vi) Any sale and repurchase will involve dealing costs; these costs must be considered but are unlikely to be of any significance to the decision. [Similarly any difference in ongoing fund charges should be considered but is highly unlikely to be significant.]

(vii) It will be necessary to liquidate the investments to rebalance the funds. This may take time. The pension fund might be exposed to being underweight in the equity markets for a short time.

Q11 The response to the question was generally poor. The question asked the candidates to consider the issues and calculations to make before deciding whether it is appropriate to re-balance the holdings between the global index fund and the domestic index fund. Candidates were not asked to consider the wisdom of investing in one or other of the funds nor the reasons for the difference in past performance. Put at its most simple, it is generally agreed that optimal risk adjusted performance requires a well diversified investment portfolio. Having made a number of different investments in the past, the practical problem of monitoring and potentially re-balancing those investments to maintain the original investment objectives arises.

12 (i) Risk is the uncertainty of timing and volatility of future cash flows. Risk includes both upside and downside risk.

Probabilistic risk means risk that can be eliminated (or "average out") by investing in a number of similar projects. Systematic risk is risk that cannot be eliminated by investing in the same type of project many times, nor by diversification. Probabilistic risk should be allowed for by specific

risk identification and analysis. Systematic risk should be allowed for by varying the discount rate used in the model.

(ii) The steps necessary to achieve an effective identification of the risks facing the project can be summarised as follows.

1. Make a high level preliminary risk analysis to confirm that the project appears fundamentally viable.

2. Hold a brainstorming session of project experts including all relevant internal and external people who have experience of this type of project and who are used to thinking strategically about the long term. Seek to identify risks, both likely and unlikely, to discuss their likely interdependence and to attempt to place a preliminary evaluation of each risk both in terms of likely frequency, and distribution of amount. Generate potential mitigation options. Risks identified at this time might include:

   - The political risk of the two islands and the likelihood of the respective governments seeking to confiscate the bridge or impose maximum charges
   - The risk of the ferries dropping prices to extremely low levels
   - The risk of the road system being let go so as to make the bridge unusable
   - The risk of other bridges or tunnels being built either by one of the governments or by another private entity
   - (Other reasonable risks are equally acceptable.)

3. Carry out a desktop analysis to supplement the results of the brainstorming session. Identify additional risks and proposed mitigation options. Develop a general risk matrix for the project. Research other similar projects and obtain expert opinion where available.

4. Set out the identified risks in a risk register with cross references to show interdependencies.

5. Ensure both upside and downside risks are catered for

(iii) For the risks identified any of the following mitigation options are acceptable provided the option is feasible for the risk.

1. Avoid the risk by redesigning the project
2. Reduce the risk by redesigning the project
3. Reduce the uncertainty through further research
4. Transfer the risk to another entity e.g. Appoint a sub-contractor
5. Insure the risk

6. Share the risk with another party and particularly with a party who is capable of mitigating the risk through expert control

Q12 A straight-forward book work question with many candidates scoring full and near full marks.