

EXAMINATIONS

September 2004

Subject 401 — UK Fellowship Investment

Paper Two

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.

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Chairman of the Board of Examiners

7 December 2004

1 (i) Requirements

(1) Full details on current asset structure

Latest reports and valuations from the two managers
Back copies of quarterly reports
Performance history
Copies of the investment manager agreements
Details of current investment objectives and any restrictions or constraints on the two managers

(2) Info on the liabilities

Copies of recent actuarial reports

Get access to any information on the current funding position

Information on recent FRS17/accounting positions

Need to identify current liability structure and get an idea how it will evolve over the medium and long term, e.g.:

- Has a cashflow projection been carried out by the actuary?
- Is the scheme open or closed to new entrants and/or future accrual?
- Age distribution, term of liabilities, sensitivity of the liabilities to discount rate and inflation

(3) Other

Access to any information on the attitude to risk of the sponsoring company and the trustees

Any background info on the financial health and future of the sponsor company would also be helpful in order to gauge the strength of the covenant, e.g. credit rating (if available), income and capital cover relative to bank and other loans.

(ii) Draft response should cover the following:

Peer group approach evolved over time as DB scheme management grew in importance and as funds grew in size.

In the early years most schemes adopted a diversified approach which was heavily orientated towards equities and UK equities in particular. This resulted in a variety of investment styles being adopted by different fund managers and differences in asset allocation and stock selection.

This approach was reasonable in most cases as typical schemes were fairly immature in terms of their liability structure, and a significant proportion of members' benefits were discretionary.

As governance structures evolved to monitor the investments more frequently and in more detail, Trustees helped by consultants increased their focus on the performance of the assets.

Performance was typically judged in absolute terms but there was increasing focus on the performance relative to similarly unconstrained funds (who may have had significant differences in style and approach).

Independent organisations grew and provided league tables and rankings in response to demand from schemes and their advisers.

Peer group median returns became the standard benchmark.

Quarterly assessment was typical — “short termism” grew

Schemes' asset allocation strategies increasingly were made relative to the peer group (rather than the underlying liabilities) and managers were accused of hugging the median asset allocation.

MFR — began the move back towards looking at the nature of the assets and liabilities, although it was not possible to match the MFR discount rate as it depended on future equity dividend growth.

Scheme specific benchmarks grew in popularity — strategic asset allocation decisions were made relative to liabilities but thereafter most focus was on the level of active risk relative to the chosen index benchmark.

Investment consultants and advisers questioned whether one manager could be good at everything (bonds, all classes of equities property etc.) and the use of specialist managers (rather than balanced) became the norm for larger schemes.

Poor equity markets and increasing deficits or reducing surpluses as a result of lower or negative equity returns meant schemes no longer regarded equities as a one way bet. The strategic benchmark came under greater scrutiny again and hastened the move into bonds especially long dated gilts and latterly corporate bonds.

Schemes have been reminded that their real risk is in not meeting the liabilities rather than the risk of underperformance relative to a peer group median or an asset benchmark comprised of some weighted average of index returns.

Liability driven investment — could be tackled in three stages

- (1) Define liabs
- (2) Set benchmark with ref to liabs
- (3) Invest assets

Liabilities can be subdivided into the following:

- (a) active
 - (b) semi fixed (LPI related)
 - (c) fixed
- (a) Active — generally the younger members

Linked to salary inflation. This is typically considered to be in the region of retail price inflation plus 1–3% pa (or perhaps greater depending on the industry sector). An appropriate target here might be the Trustees'/actuary's best estimate of salary inflation plus say 1–2% pa.

Appropriate assets — equity, private equity, perhaps property but conventional gilts, corporate bonds, index linked stocks or cash unlikely to be of use.

Hence FD's suggestion will not help long term solvency here if we see strong salary inflation. 100% move to corporate bonds only helpful in as much as it reduces FRS17 volatility. Long term cost of scheme likely to be higher since expected returns will be lower.

- (b) Semi fixed — LPI (0–5% range)

Index linked gilts — reasonably good match, unless inflation is negative.

Use of corporate bonds requires an assumption to be made about long term rate of inflation. Thereafter corporate bonds are reasonable as long as inflation does not exceed the assumed rate.

Mixture of index linked gilts and corporate bonds a good match here

Benchmarks are set by duration of liabilities

- (c) Fixed — corporate bonds and conventional gilts are good for matching these liabilities

Benchmarks are set by duration of liabilities

In (a) if a target of say RPI +3% is adopted as the benchmark rather than a conventional equity index, stocks may then be chosen by the manager for their initial yield and their long term dividend growth potential rather than for their

likely out performance of an index. In this case it would be appropriate to review performance over a longer timeframe say up to 10 years.

In (b) and (c) a closer match to liabilities can be achieved by making use of a cash flow matching strategy.

A cash flow projection for up to say 30 years can be constructed by the actuary or investment adviser. Bonds can be chosen by duration and expected cashflows so as to provide as good a match as possible to the anticipated cashflow pattern.

This can be further fine-tuned by adding a swap overlay so as to hit the required cashflows exactly.

The cash flow profile can be regularly reviewed and adjustments made to the bond profile or swap overlay as required.

It is possible for the scheme to convert fixed cashflows into index-linked cashflows in a swap overlay, or to take on some credit risks to increase expected returns.

Transitional and other issues

Are the plan sponsor and the trustees ready for such a radical overhaul of investment policy?

Which investment providers should be used — are the two existing managers appropriate for any asset classes? How should appropriate managers be chosen?

Active or passive approach in equity, bonds, or both?

How should the transition be achieved? Over what period? Is now a good time for a switch or should they wait, or should it be phased (pre-arranged schedule or rule-based approach)?

How liquid are the investments?

How can transition expenses be kept to a minimum? Is there any scope for in-specie transfers? Is Stamp Duty Reserve Tax likely to be incurred, and can this be mitigated in any way?

How frequently will the Trustees obtain advice on their cashflow matching strategy in the future? Presumably this could be built into the triennial actuarial valuation process with adjustments made to the bond portfolio and swap overlay at this time.

Can a fund manager be found who is prepared to work on this type of mandate? What is their proposed fee structure, and how does it compare to conventional fee structures?

Are there any pooled funds available which might have similar objectives to the benchmark for active members?

Do the Trustees have the appetite for governance for this type of arrangement, and for going against the traditional pattern?

Credit was granted for other relevant points.

- 2** (i) Purpose: measure of absolute return
assess performance relative to an index
assess performance relative to other funds
- but also used for secondary purposes e.g.
- to incentivise key staff
to reward staff and organisations appropriately
to monitor and assess decision making of all or parts of a process
to establish where the risks are in funds or in a process (through attribution)
ultimately to aid improvements to an investment process
- Methods:
- Money weighted measure of absolute return
relatively easy to calculate
compare with actuarial return expected of fund
affected by cash flows and especially by the timing and size of them.
Not good for comparing with an index or with other funds
- Time weighted overcomes the problems caused by cash flows
more difficult and time consuming to calculate
— fund values needed each time there is a cash flow good for comparative purposes
a good e.g. of a perfect time weighted return is the unit price of a pooled fund

Approximations to a time weighted return can be made

e.g. money weighted returns over short periods e.g. monthly or quarterly and chain linked together

Better approximations to the returns can be made by day dating any cash flows

Analysts test which makes use of the fact that the relative money weighted return is a very good approximation to the relative time weighted return i.e.

$$\text{MWR of fund/MWR of index} = \text{TWR of fund/TWR of index}$$

Risk adjusted measures try to factor in the risks taken in achieving the returns e.g. 1% out-performance achieved with a low level of risk should be regarded as a better result than the same level of out-performance from a very risky portfolio.

Various measures include

Treynor

Sharpe

Jensen

Pre-specified SD

(ii) Formula used is

$(EMV - SMV - \text{Net Cash flow}) / (SMV + \text{time weighted cash flow})$

Assumptions

The timing of investments

For Manager X cash flows are uniformly spread throughout the quarter

For Manager Y cash flows are at exactly at the end of each quarter

There are no other cash flows

Income can be ignored or is similar to both funds and to the benchmark

Expenses on the raising and investing of cash flows is ignored

	31/12	31/03	30/06	30/09	31/12	Total
Index	100	110	105	115	120	
% Return		10	−4.545	9.524	4.348	20
Manager X						
Fund value	250	282.5	275	307.5	327.5	
% Return		10.891	−4.386	9.910	4.839	22.173
Manager Y						
Fund value	250	280	250	325	330	
% Return		12	−7.407	12.069	4.762	21.754

One year is too short a period for performance measurement given mandates
Both started with the same amount of money

Both have received £20m of new money on average roughly half way through
the year

However results have been affected by the timing of the cash flows

Both X and Y out-performed the benchmark.

Although Y has more money at the end of the year, X has performed better.

Y was helped by the fact that it received a large inflow of money when the
markets were at a low point. This was out with the managers control and he
should not be given credit for this.

X outperformed the index each quarter.

Y had a much more volatile ride and hence if risk adjusted measures were
used this would tip the balance even further in favour of X.

(iii) Full details of the actual dates and amount of the cash flows.

A full portfolio valuation at each date.

Commentaries from fund managers on performance, style influences and
investment issues

If the Analyst's notional fund roll-up test were to be used a full valuation
would not be needed at every date. However the index value would be
required.

Information on the costs of investing and realising the relevant amounts.

- (iv) (Unit 13 section 3)
- Organisation of business
 - Scale of operation
 - Split of retail and institutional funds
 - Organisation of investment teams — research, portfolio management and Marketing/client servicing
 - Active or passive
 - Top down/ bottom up balance
 - Style factors
- Assessment — look at
- Philosophy
- clear definition
 - clear understanding of this throughout the organisation
- People
- overall quality of staff
 - quality of leadership
 - overall resources
 - motivation and commitment
 - enthusiasm
 - clear understanding of roles, responsibilities and boundaries
 - stability of personnel
- Process
- look at stock selection, asset allocation, and portfolio construction
 - look for clear definitions
 - perceived advantages
 - concentrate on the key inputs and outputs
 - dealing and settlement
 - robustness
 - repeatability
 - flexibility
 - responsiveness
 - bottlenecks
 - risk controls
 - performance measurement, attribution and reporting processes
- (v) If derivatives are not used then the fund will need to sell a significant quantity of US equities and buy a significant quantity of US bonds in a short period of time to alter the allocation.
- These transactions will risk moving the markets, and there may be insufficient time to manage the trades efficiently to minimise dealing costs and spreads, and the majority of the fund's US equity holdings will need to be reduced to maintain the portfolio style.
- The allocation change will also need to be reversed after about one year, further increasing transaction costs.

If the fund is managed on a pooled basis, these effects might be mitigated, but otherwise performance will suffer.

Particular issues may arise with small-cap stocks.

A derivative based strategy will enable the strategic allocation to be altered without altering the existing US equity portfolio, which is likely to have been constructed over a period of time.

It is also relatively inexpensive to carry out this type of strategy over periods of around one year using derivatives.

Exchange traded or bespoke OTC derivatives could be used, but exchange traded derivatives are more likely to be suitable as positions can be reversed cost-effectively and quickly.

A further advantage is that exposure to US bonds can be gained quickly, without a need to build a portfolio.

This is a particular advantage for some of the more illiquid bonds.

- (vi) Futures contracts have both positive and negative cash flow implications as they require initial margin (negative cash flow for the portfolio) and variation margin (could be either negative or positive).

Forward contracts are usually settled at maturity but some counterparties could call for both initial and variation margin.

The cash flows on the underlying portfolio arise only when stocks are bought and sold.

For a long-term hedge, forward contracts for one term may have to be closed out and reopened for a further term.

The profit or loss on such transactions may be out of time step with the cash flows of the underlying portfolio.

These cash flows need to be funded and invested.

- (vii) Total fund size = £1.315billion, so US equity holding to be reduced from £263m (20%) to £131.5m (10%), and £131.5m (= \$236.7m) of US bond exposure to be gained
Equity futures – sell \$236.7m / \$0.05m = 4,734 contracts
Bond futures – buy \$236.7m / \$0.11m = 2,152 contracts

- (viii) The equity future sale and bond future purchases are unlikely to be a perfect match for the desired equity sales and bond purchases respectively.

This is because the equity future is based on an investment in line with the S&P 500 index, and the bond future is based on an investment in a benchmark bond.

Dividends on the portfolio and notional dividends on the index will be different and so affect returns. The dividends expected on the index at time of purchase may also change and so affect the future price.

In practice, if an actively managed equity portfolio is being reduced then it is unlikely that movements in the S&P 500 index will be a perfect match for movements in the portfolio.

As the equity future will have $\beta = 1$, there could be more or less equity risk remaining after the equity future has been sold relative to the β if the portfolio had been halved in size by sales of holdings.

It would be possible to adjust the number of equity futures sold to ensure that the portfolio β remains unchanged.

Similar issues will apply for the bond future, as if a portfolio was being constructed it would be likely to have different coupon, duration and credit characteristics to the benchmark bond underlying the future.

Candidates answering from a bond perspective would get credit for the similar points but additional marks will not be given for the same point on both.

- (ix) Currency exposure can be hedged using either exchange traded futures or OTC forwards, which promise to deliver a certain number of dollars at a future date. Both methods are liquid and have low transaction costs.

The value of dollar-denominated assets would be measured daily or weekly. If this exceeded the hedge then more dollar futures/forwards will need to be purchased, or alternatively the hedge may need to be reduced by selling futures/forwards.

This approach could be refined by measuring the value of assets more frequently, or adjusting the size of the hedge to allow for correlations between the dollar/sterling exchange rate and the assets held.

END OF EXAMINERS' REPORT