

EXAMINATIONS

April 2000

Subject 404 — UK Fellowship Pensions

Paper Two

EXAMINERS' REPORT

General Comment on Subject 404 (Papers One and Two)

The overall standard on the papers was mixed.

The straightforward questions, including bookwork, were generally answered reasonably well. However, answers were often narrow in that they covered a small number of topics in great depth and missed the wider aspects. This limits candidates ability to score well.

The better candidates are able to apply basic principles to non-standard situations and, in determining borderline candidates, this is a key differentiator.

Individual comments on a specific question appear in italics after each model solution.

- 1 (i) A requirement under the Pensions Act 1995 the funding level should be assessed between the actuarial value of liabilities and the assessed value of the assets

MFR is currently under review
Based on discontinuance approach
market value of assets
estimate of annuity cost for pensioners
and value of deferred benefits for actives and deferred
with an expense loading
under a prescribed set of assumptions
bonus for listing assumptions
only guaranteed benefits are included

Carried out every three years
with an annual review

If there is a shortfall of assets arises then company must provide additional assets in the short to medium term

If MFR level below 90% must pay additional contributions to bring MFR level up to 90% within one year
or provide appropriate security

If MFR level between 90% and 100% must bring up to 100% within 5 years
or balance of 5 years if previously under 90%

A schedule of contributions sets level of contributions required from the company which in actuary's opinion will ensure scheme meets MFR

Transitional terms up to April 2002

- (ii) For each non pensioner member the liability calculated on a prescribed assumptions is multiplied by Market Value Adjustment (MVA) to reflect market conditions

MVA for person more than 10 years before MFR pension age MVA is equity MVA.

MFR pension age is earliest age at which unreduced benefit can be drawn as of right

Within 10 years linear combination of equity MVA and gilt MVA moving from 100% equity MVA 10 years from retirement to 100% gilt MVA at retirement

If a gilt matching investment policy in place then gilt MVA used for all non pensioner members

Equity MVA is 3.25%
divided by net dividend yield on the FTSE Actuaries All Share Index

Gilts MVA is value on annualised yield of FTSE Actuaries Government Securities 15 year Yield Index if fixed pension increases or FTSE Actuaries Government Securities Index Linked Real Yield over 5 years (5% inflation) if index linked increases of a 15 year stock with coupon equal to long term assumption payable annually in arrears.

If liabilities in payment could be valued on either basis (e.g. LPI) then use MVA which produces the lower liability

For lump sum liabilities the MVA on that part (g) of liability assumed to be invested in gilts (e.g. 0.3 if 7 years from retirement) should be $g + (1-g) \times \text{gilt MVA}$

- (iii) Take into account following matters over period since the last MFR valuation

All matters informed to the actuary by the Trustees and Employer in accordance with Regulation 6 of the Occupational Pension Schemes (Scheme Administration) Regulations 1996

Changes in investment markets

The trustees stated investment policy

The investment return actually achieved by the scheme (if known)

The level of salary increases (if known)

The level of pension increases (if known)

The actual contributions paid

Any other matters of which the actuary is aware
e.g. major redundancy exercise or benefit improvements

- (iv) The following is a possible approach. The examiners gave credits for a wide variety of approaches provided they were well set out and argued. MFR funding level at 1.4.98 was:

Actives	25m
Deferred	20m
Pensioners	30m
Expenses	<u>*2.75m</u>
Total	77.75m

$$*50 \times .04 + 25 \times .03 = 2.75$$

Funding level at 1.4.98 = $90 / 77.75 = 116\%$

equity MVA at 1.4.98 = $3.25/2.36 = 1.37719$

equity MVA at 1.4.99 = $3.25/2.33 = 1.39485$

gilt MVA based on index linked yields because inflation increases

annualised yield at 1.4.98 is 2.87%

annualised yield at 1.4.99 is 1.74%

gilt MVA at 1.4.98 is $1.1176 = (0.0385 \times 12.051) + (1/1.0287^{15})$

gilt MVA at 1.4.99 is $1.276 = (0.0385 \times 13.1028) + (1/1.0174^{15})$

Contributions paid $0.15 \times 9.25 = 1.39$

Pensions paid $(2.3 + 2.4) / 2 = 2.35$

Return on assets $105 - 90 (1 + i) - (1.39 - 2.35) (1 + i)^{1/2} = i = 17.8\%$

Assume there have been no major changes in benefits

Assume no significant augmentation/strains through for example redundancy exercises

Pensioner liability

Assume pensioner membership one year older. Actual increase of 2.5% vs expected inflation of 4%.

Therefore expected liability is approximately

$30 \times 1.276 / 1.1176 \times 1.08 \times 1.025 / 1.04 - (2.3 + 2.4) / 2 \times (1.178)^{0.5}$
 $= 36.44 - 2.55 = \text{£}33.9\text{m}$

Deferred pensioner liability

Assume deferred membership one year older

Take 100% equity MVA for 50% (>10 years) and 50% equity MVA + 50% gilt MVA for other half (within 10 years) at both dates.

i.e. 75% equity MVA + 25% gilt MVA

Gives MVA at 1998 of 1.312

Gives MVA at 1999 of 1.365

Estimate deferred pensioner liability assuming same average age but total deferred pensions have increased by **say 2.5% (or any reasonable assumption)**

Liability is approx $20 \times 1.025 / 1.04 \times 1.365 / 1.312$
 $\times 1.09 = \text{£}22.4 \text{ million}$

Active members

Assume membership profile/average age one year older

Take MVA based on 100% equity for 60% (>10 years) and 50% equity + 50% gilt for other 40% (<10 years) at both dates.

i.e. 80% equity, **20%** gilt

Gives MVA at 1998 of 1.325

Gives MVA at 1999 of 1.371

Accrued pensions will have increased in line with salary inflation (approx 5.5% not statutory revaluation assumed to be 4%)

Extra years accrual was approximately $.125 \times 9250000 = \text{£}1.2 \text{ million}$
 (any reasonable approach is acceptable here)

Actives liability = $25 * (1.09) * (1.371/1.325) \times 1.055 / 1.06$
 $+ 1.2 \times 1.09 \wedge 0.5 \times 1.371 = 28.06 + 1.66 = \text{£}29.7\text{m}$

MFR funding level at 1.4.99 was approximately:

Actives	29.7m
Deferred	22.4m
Pensioners	33.9m
Expenses	<u>*3.08m</u>
Total	89.1m

$*50 \times .04 + 36.0 \times .03 = 3.08$

Funding level = $105/89.1 = 117.8\%$ i.e. an increase of 1.8% in MFR funding level

- (v) ultimate cost of pension scheme is determined by benefit structure
 actual investment returns
 and expense deductions

Method will target pace of funding. Change method – to reduce volatility

could require members to meet some of the cost
 this is likely to be a fixed percentage; i.e. it will reduce cost but not volatility (which will increase due to gearing)

accounting standards require costs to be reported on funding basis
 currently SSAP24 but basis is changing
 volatility depends upon experience relative to funding assumptions
 MFR introduced new constraints in minimum allowed to pay
 and short term cash injections if adverse experience

Reducing cost and volatility at same time unlikely to be possible for given benefit structure
could increase funding level to include margins against adverse experience and allow greater investment flexibility

true costs can be reduced by increasing investment returns by investing in assets likely to maximise returns given cash flow expectations
may mean a move to a greater holding of equities based on past performance

volatility reduced by investing in assets most likely to move in line with liabilities
based on liability valuation basis
may mean move to a greater proportion of index linked gilts to match pensioner liabilities

might be appropriate to have an asset liability modelling exercise carried out

could amend defined benefit structure (probably to lower accrual)
but this is only likely to be possible for future service
e.g. career average not final salary
could reduce pension guarantee to LPI
any other sensible proposal (remove early retirement without consent)
could restrict future membership of scheme
could integrate more with state benefits **e.g.** contracting out but company loses some control if Government changes terms

Could also better manage expenses of running scheme
company could recognise costs of augmentations/early retirements/redundancies as they happen

Comment:

Parts (i) and (ii) were generally answered well. In part (i) most candidates correctly noted the funding requirements for a scheme with a funding level below 100%. Only the stronger ones also noted the effect of the MFR contributions on a scheme with a funding level just above 100%.

Part (iii) was answered poorly.

The majority of candidates made a reasonable attempt at part (iv) whilst only the better candidates scored well on part (v).

Part (v) required a broad range of different approaches to measuring scheme costs, suggested amendments to the benefit structure and possible changes in investment strategy. The majority of answers were reasonably well drafted, being well structured and avoiding jargon.

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- (i) ➤ Trustees are responsible for specifying overall guidelines for investment strategy after consultation with the sponsoring employer
- Trustees must follow requirements of Trust Deed & Rules relating to investment
- This is set out in the Statement of Investment Principles (“SIP”)
- The SIP will detail:
- minimum and maximum holdings in different asset classes
- It may also cover:
- maximum in any one company
 - maximum in illiquid assets
 - use of futures and options
 - self investment
 - exposure to foreign currency
 - approach to Socially Responsible Investment
- The trustees must review the SIP regularly
- Trustees must take advice from a qualified person before preparing the SIP
- Review and SIP must consider:
- any changes to liability structure
 - funding position
 - manager's performance
- The trustees will be expected to give the investment manager a benchmark for performance
- Which may express target returns
- relative to other managers
 - or relative to an index
- The target will depend on other SIP restrictions (e.g. tightly defined asset classes)

- The investment policy will depend very much on liability profile.
For a scheme of this type:
 - the contribution rate will need to pay for benefits for service between joining company and the scheme and hence will be higher than the cost of one year's benefit
 - unless there was an initial single contribution to meet this shortfall then funding will likely be less than 100%
 - liabilities and assets are small but likely to be fast growing
 - liabilities are mainly long term, so short term risk is typically less important
 - company is growing fast, so liabilities in terms of salaries may be expected to grow faster than for a typical scheme
 - but this will depend on how salary increases. Internet companies pay in stock options not base salary.
 - The cashflow is therefore positive
 - Liquidity is unlikely to be important at the moment
 - number and size of deferred pensioner liabilities will influence need to hold bonds.

- This may allow a more aggressive investment strategy with a significant investment in equities (or any other valid argument)
 - especially as shortfall should (under MFR) be made up over a short period.

 - although if the shortfall persists the trustees may be advised to hold bonds in respect of non-active liabilities.

- On assumption that an aggressive policy is acceptable the fund manager should be allowed to diversify to non UK markets to enhance return
and the target for the fund manager may be aggressive
e.g. 2% over median index over 5 years

- Self-investment is restricted to a maximum of 5% of the assets.

- (ii) ➤ Stochastic modelling is indeed becoming more popular as computing power evolves

- A stochastic Asset-Liability uses a stochastic or statistical model for all economic factors.

- With, typically, a deterministic model which specifies values explicitly for demographic elements such as mortality, marriage rates etc.

- The main aim is to project possible cashflows rather than average values

- This uses large samples of possible cashflows
- Allowing estimates of probabilities of future outcomes, e.g.
 - possibility of fund being insufficient to meet liability funding targets
 - or that surplus will exceed a given percentage
- The process is useful in quantifying the probability of an event or events, happening that the trustees have particular concern for
- It may be used to specify a funding rate to minimise or maximise the probability of a specified constraint

e.g. 90% confidence funding rate will never exceed a certain rate (or any other example)
- It may be used similarly to specify **an** investment strategy
- The process is therefore a useful one, but has some drawbacks:
 - many more assumptions are needed
 - there is sensitivity to assumptions on expected returns etc.
 - additional tests for robustness of assumptions
 - results only accurate over long time period
 - all of this requires extra work, meaning extra cost
 - the power of stochastic ALM should not be over-estimated, as it does not offer any guarantees
 - limits of models
 - the base funding rate recommended is unlikely to be very much different from that specified by traditional methods
 - the investment strategy of the scheme is likely to be defined by cashflow (highly positive), and ALM will likely only provide the same answer
 - for a small scheme with large uncertainties in future liabilities, the accuracy of results will be poor

In view of the above, the extra cost will not be likely to be of value, although a stochastic ALM can be carried out if trustees wish.

- (iii) ➤ The main changes to the scheme assets and liabilities are:
- size - the fund will have grown dramatically
 - liabilities may be expected to grow less dramatically, as membership extended beyond executives
 - liability term will have shortened if managers have higher average age
 - cashflow may be less positive (or perhaps negative) if transferring liabilities more mature
 - funding rate likely to be closer to 100% if past service reserve (PSR) was paid
 - although PSR basis may differ from receiving scheme
- As a result, investment strategy may be set less aggressively
- With greater need for liquid assets
- So SIP may have to alter
- asset allocation/benchmarks
 - performance targets
- A target set of percentages may be the same as typical fund (or any other reasonable argument)
- The target for fund may be
- 1% over median over 3 years (or any other reasonable argument)
- (iv) ➤ Unapproved Benefits are provided by schemes which do not have approval from the tax authorities to benefit from tax advantages/reliefs
- Benefits would normally be provided from an approved scheme up to the maximum level allowable
- Thereafter benefits can be provided by an additional unapproved scheme either to provide:
- a higher percentage of final remuneration, or
 - a percentage of unapproved salary (e.g. salary over the "cap")
- In the UK, for schemes set up after 1988, the maximum approvable benefit is $\frac{2}{3}$ x final remuneration up to a maximum salary (the cap)
- Employer contributions when paid can be treated as a business expense

- Lump sum from FURBS is tax free
- An unapproved scheme may be defined benefit, but is more usually defined contribution
- Or may be completely unfunded
- But if unfunded, cost of benefit accrual must be reflected in company accounts
- And security is lower
- The use of an unapproved scheme may be attractive to the company, but first they may wish to:
 - maximise approved benefits in existing scheme
 - or in an approved top-up scheme
- Some affected employees/executives may prefer salary/other benefits
- Administration of UURBS is much more straightforward than FURBS
- Directors may prefer dividends
- So it may be worthwhile getting advice from the accountants, to see what is most beneficial
- If initial scheme members are to receive benefits on salary over the cap, an unapproved arrangement will be required
- For transferred-in members, if the original scheme was set up before 1988, members who joined before then may receive benefits on salary over cap in the approved arrangement
- Draw attention that there are two groups affected
 - those over the cap
 - those under the cap who will ultimately exceed cap due to inflation
- The company may decide that a formal unapproved arrangement is not economical or tax efficient
- But may provide unapproved benefits at retirement for selected employees

Comment:

This question was answered less well than question 1. In part (i) candidates scored reasonably well. A significant number confined their answer to a discussion in detail of the Statement of Investment Principles and missed the other points.

In part (ii) many candidates made general comments about stochastic processes but failed to make these relevant to the scheme in question. As a result many good candidates did not score as well as they might otherwise have done.

Part (iii) was answered well by candidates who recognised the liability profile would, probably be more mature, and the impact will depend on the level of bulk transfer received. It was a simple matter to relate this to the points in part (i) to score highly. A surprising number stated the transfer would have no / limited impact.

Part (iv) was not answered well. There was evidence of time pressure and many candidates wrote only a handful of points. Candidates who made a serious attempt were able to score well.