Faculty of Actuaries **Institute of Actuaries**

REPORT OF THE BOARD OF EXAMINERS ON THE EXAMINATIONS HELD IN

April 2002

Subject 404 — UK Fellowship Pensions

Paper One

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The examiners are mindful that a number of interpretations may be drawn from the syllabus and Core Reading. 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.

The report does not attempt to offer a specimen solution for each question — that is, a solution that a well prepared candidate might have produced in the time allowed. For most questions substantially more detail is given than would normally be necessary to obtain a clear pass. There can also be valid alternatives which would gain equal marks.

K Forman
Chairman of the Board of Examiners

25 June 2002

EXAMINERS' REPORT

Question 1

Parts (i) and (ii) generally well answered. Common mistakes were not realising that it was a two year period under consideration and failing to use Total Return index to accumulate assets.

Part (iii) was not so well answered. Few people understood dividend growth requirement underpinning MFR basis. Few people mentioned implications of fall below 100%.

Question 2

In part (i), candidates made their answers pension-specific, rather than keeping it general, as the question required.

The first part of part (ii) was generally answered well with candidates able to produce a reasonable list of reasons for analysing surplus. Few candidates gave an adequate description of the membership data that would be required.

Parts (iii) and (iv) were generally answered reasonably well.

Question 3

Part (i) was generally well answered although many candidates failed to mention the earnings cap. Similarly, few candidates gave a clear definition of Remuneration or Final Remuneration. Many candidates did not point out the different tax treatments of contributions for higher rate tax payers.

In part (ii) most candidates scored good marks for normal retirement limits (cash and pension) but missed out on points relating to early leaving benefits. Few managed to describe accurately the constraints imposed or the flexibility available when buying an annuity.

Question 4

Despite being a pure bookwork question, few candidates managed to score more than half marks in part (i). Part (ii) was the best answered part of this question, with many candidates demonstrating a good awareness of the annuity market. Candidates came up with lots of good ideas under part (iii).

Question 5

Part (i) was bookwork and was answered well. Few candidates picked up marks available for with/without consent issues.

Part (ii) was not answered as well, with many candidates simply failing to make sufficient points in their responses. The best candidates spotted the potential opportunity to "give *away" surplus as part of the deal in return for "cash" benefits elsewhere in the deal. Few candidates offered helpful suggestions about how to treat the series of disposals consistently to achieve efficiencies. Drafting was generally fairly poor, as candidates failed to explain complicated concepts sufficiently clearly and reports lacked structure. Many candidates failed to recognise that this was a RCA scheme. Whilst points were not deducted for erroneous comments that would only have been applicable to final salary schemes, plus points were available to candidates who made it clear that they had understood the application to RCA schemes.*

Question 6

This question was answered poorly by many candidates perhaps because they were running out of time. Few reports were sufficiently well structured. More marks could easily have been picked up by stating simple, fairly obvious facts about pace of funding and so forth.

Many candidates were able to identify actions to be taken to mitigate risks. Not quite so many were able to explain why the rate payable under the existing scheme may no longer be appropriate.

Few candidates scored the points that were available for comments about MFR and FRS17.

1 (i) Expenses 4% of £50 million + 3% of £3 million = £2.09 million

Funding level = 60 / (53 + 2.09)
= 109%

(ii) GN27 assumptions:

Interest 9%
Price inflation 4%

Adjustment to market conditions (more than 10 years from retirement)
= 3.25/Yield

Liability at 31.12.2001:

$$= 53 \times \frac{2.12}{3.25} \times \left(\frac{1.09}{1.04}\right)^2 \times \frac{173.4}{167.5} \times \frac{3.25}{2.63}$$

= 48.582

expenses 4% of 48.582

= 1.943

$L + E =$ 48.582 + 1.943 = 50.525

Assets

(a) assume ½% dealing expenses
(b) assume no tracking error

Fund at 31.12.2001= 60 × 0.995 × 2488.96/3050.51 = 48.710
funding level = 48.710/50.525 = 96.4%

(iii)

- dealing costs ½%, direct reduction in funding level
- dividend yield on whole market not moved in line with price reductions
- dividend growth over period:

$$\frac{2.63 \times 2523.88}{2.12 \times 3242.06} = 0.966\text{, i.e. } -3.4\%$$

RPI $\frac{173.4}{167.5}$

= 1.035, i.e. + 3.5%

minus real growth of approximately 7%

- GN27 (MFR) needs 1½% to 2% per annum real
- Funding level fallen over the year from 109% to below 100%
- Employer debt of £1.815m (50.525 – 48.71)
- to be made good within 5 years (407 under transition)
- even though fully invested in most closely matching asset class
- MFR not directly matchable
- Might decide to reduce transfer values
- Vodafone, BT dividend cut
- Companies appear to be rewarding shareholders in different ways since abolition of ACT credits
- Changes to MFR in March 2002

2 (i) **The probability of providing the benefit**

- experience not in line in the assumption
- relevant if benefit dependent upon being alive, married, in employment etc.
- if benefit is unconditional, then no surplus will arise.
- otherwise, every individual in an arrangement may contribute a surplus/deficit to give an aggregate surplus/deficit.

- **Expected cost of the benefit**
- usually dependent upon actual v expected inflation.
- expected contributions during funding period
- can be from a number of sources, e.g. state/employer/employee
- any failure to pay contributions, or link of contributions to inflation out of line with assumptions may lead to surplus/deficit

- **Expected invested proceeds during funding period**
- unless investments exactly match benefits, it is likely actual proceeds will not match expectations, leading to a surplus/deficit.
- even with matching investments there are risks of borrower defaults
- experience may have been different to expected.

(ii) The experience would be monitored to:

- check whether the method and assumptions used to finance benefits are appropriate
- to identify sources of surplus and deficit
- independent check on valuation results
- required by GN9 for pension schemes
- to negotiate buy out/insurance terms
- to set assumptions

The data required is:

- all events occurring over the monitoring period
- tabulated by age (or other appropriate factor)
- although multi-way analyses are possible
- recording number of members to each event
- data relating to economic experience is also required
- for example periodic records of salary increases during the valuation period will be required
- grouped by relevant factors (e.g. age, service etc.)
- accounting info e.g. cashflows

(iii)

- data must be sufficient
- to be statistically credible
- data should be accurate

For example:

- too few members may only give a very crude analysis
- a scheme with only young members may not give a statistically sound analysis of mortality
- any other relevant example
- the degree of grouping of data required will also affect the credibility of the analysis

(iv)

- purpose for which use of analysis is being considered
- results should not be used blindly
- was period investigated typical
- was experience representative of the future
- were there any abnormal events
- or events affected by economic cycle
- are there any underlying trends (e.g. improving mortality)
- were groups assessed sufficiently homogeneous
- perhaps adjusted to create prudent margins

3 (i) **Contributions**

Pay is gross earnings, including taxable benefits in kind, e.g. car, health insurance

Subject to earnings cap, £95,400 per annum in 2001/2 year

Cap generally increases in line with price inflation

	Occupational scheme	*Personal scheme*
Member	up to 15% of pay	age related maximum scale ranging from 17½% to 40% of pay
	full tax relief at source	contributions paid net of basic relief, higher relief through tax code
Employer	no limit (subject to "surplus" rules)	included in members
	allowable business expense	allowable business expenses
	has to contribute	

(ii) **Benefit limits**

Personal Scheme

Whatever accumulated assets will purchase
25% of assets can be taken as tax-free lump sum
Unless life assurance purchased separately (from within maximum contribution limits) benefit = fund

Can choose form of ancillary benefits at retirement:

- pension increases
- guarantee period
- dependant's benefits

Retirement age 50 to 75

Early leaving – stop contributions/continue with new employment/transfer to other PPS or new employee OPS.

Occupational Scheme

Final pay is usually last twelve months basic pay plus average of last three years non-basic pay.

Retirement

Retirement age 60 to 75 normal
Maximum pension = 1/30th of pay for each year of service

subject to overall limit of two-thirds less retained benefits from other arrangements
Can always give 1/60th accrual
Retained benefits can be ignored if salary at entry less than 25% of earnings cap
Pension limits includes pension equivalent of lump sum
Cash lump sum 3/80ths of final pay for each year of service
(max 40 years) or if greater 2.25 × pension payable (before commutation)

Early leaving

If less than two years' qualifying service benefit could just be refund of own contributions
If more than 2 years' qualifying service benefit must be preserved (or transfer
value paid to approved arrangement).
Maximum benefit is benefit maximum assuming service continues to normal retirement age

Death-in-service

Maximum lump sum = 4 × pay + refund of own contributions (+ interest)
Maximum dependant's pension = 2/3 rds of maximum pension assuming retirement at normal retirement age

Ancillary benefits

Must have LPI increases (or with-profits annuity purchased)
Might be restrictions on guarantee periods, purchase of spouse's benefits
Maximum spouse's = *2/3* rds of maximum
member's pension before commutation
Might be guaranteed conversion terms at retirement

4 (i)

Value of assets and liabilities should be calculated in accordance with MFR regulations
and GN27
When winding up full value of employer related investments must be included, not restricted to 5%
If a deficiency revealed must provide certificate in prescribed format
In multi-employer schemes total deficit calculated
trustees provide employment details to apportion debt
CEPs are debts on scheme not liabilities
Actuary should take instruction from the trustees concerning whether a valuation is to be carried out
Advice should be addressed to the trustees
and trustees should instruct on effective date for the calculations
Liability classes determined on crystallisation date
Calculations carried out at applicable time

No allowance for discretionary benefits

(ii) GN19 estimates the cost of purchasing immediate annuities for pensions in payment
and providing transfer values for deferred members
Transfer values based on long term assumptions
adjusted for current market conditions
linked to equities for members more than 10 years from retirement.
Transfer values are <u>expected cost</u> of benefits
Annuities are cost of <u>guaranteeing</u> benefit
calculated by insurance company
Likely to be based on low risk/risk free fixed interest investments throughout
and will include profit margin
and expense loadings
Will be based on conservative prediction of future mortality
Market is very small for deferred annuities therefore prices not very competitive
GN19 immediate annuity may well be different to actual
Market movements between calculation date and buyout.

(iii) Currently if deferred member debt will not secure benefits on a guaranteed basis only an expectation from the transfer value
Debt based on deferred annuities provides absolute guarantee
provided company has sufficient assets
There may be increased transfer values available on wind up
Cost and risk to employer may increase therefore employer may discontinue scheme
or reduce benefits going forward
or at worst cease trading
Possibly better employee relations for employer because benefits are secure and honours commitment
Likely to increase costs on wind up
therefore reduced flexibility for employer regarding amending benefit position
May lead to more conservative investment strategy thereby increasing long term costs
May have implications for company accounts
and flexibility when selling or buying businesses
Possibly increased actuarial costs of calculating debt position

5 (i) Usually a specific pensions schedule to sale and purchase agreement.

and actuary's letter specifying the valuation basis.

Pensions schedule:

definitions of terms used

obligations of seller:

- to supply information
- use best endeavours to ensure transfer value paid
- make good any shortfall

- get regulatory approval for transfer
- provide required warranties
- calculation of transfer value
- permit participation (if relevant)
- not to change benefits in participation period

obligations of buyer:

- benefits to be provided with transfer value received, usually equivalent value benefits
- sometimes future service guarantees
- prepare communications for members
- agree transfer value
- pay appropriate contribution rate during any participation period

other:

- what happens in dispute cases
- how transfer value calculated, past service reserve, share of fund, etc.
- whether participation period is included
- asset adjustments to actual payment date
- how transfer of assets is made, cash, or shares
- timescales for completing work
- usual to do transfers with consent
- to avoid GN[16] complications
- what happens if members do not consent to transfer
- there may be GN19 issues

(ii) (a) **Transfer value**

- Check Trust Deed and Rules to see what trustees can pay
- Method past service reserve or share of fund or cash equivalent?
- Precedents and any stated policy
- Basis to be used to determine transfer value funding basis, accounting basis, best estimate or on advice of scheme actuary
- Allowance for any discretionary benefits, e.g. pension increases
- Might be able to negotiate a better purchase price by "giving away" surplus
- Which employees are involved in deals?
- Same deal for all would be simpler
- Want to watch balance of scheme remaining if transfer values on past service reserve basis, likely to end up with significant surplus. Consider statutory surplus basis.
- Sensible to get agreement of trustees to terms in advance, if not, company will have to make good any shortfalls

- Need to decide on appropriate asset adjustment,
  Actual fund return might seem sensible but unlikely to have daily figures
  Unit prices or movements in line with index typical **but** investment risk if adjustment different to actual investments of scheme

(b) **Participation**

- Check Trust Deed and Rules to see if new employers of business being sold may be admitted to scheme during participation period
- Purchasers contribution rate to be paid during participation period
  usually pay full ongoing cost
  can be based on actual transferring membership or aggregate,
  aggregate easier as then same schedule for all deals
- Is transfer value calculated at start of period and contributions subsequently paid returned (with asset adjustment) or at end of period?
- If return of contributions route need some deduction for risk benefits
  and any administration expenses met by the scheme
- Usual to limit length of participation period to no more than 12 months
- Need to watch that beneficial terms, eg on redundancy, are not abused by purchaser during participation period
- Note RCA so not necessary to have salary increase protection during participation period
  or any arguments about who gets withdrawal profits

6 To have a stable contribution rate will need to fund on a conservative basis
and/or will need to have favourable/neutral experience
Conservative basis will increase funding rate

Contribution rate is combination of past service funding position and future rate
Experience items which could damage past service position are lower than expected investment returns
higher than expected salary increases
experience items such as early retirements and/or less than expected deaths could effect position.

May need to have conservative investment policy
so that asset values do not fluctuate significantly and therefore lead to variable costs
Conservative investment policy may increase long term cost
Future accrual part of the rate is affected by profile of membership
which may change due to new entrants
and funding method used

It should be noted that contribution rate is suggested funding rate
not necessarily true cost of benefits being provided
There is some flexibility in setting contribution rate

Legal debts are currently based on MFR legislation
If scheme winds up must cover buy out of pensioners and transfer values for everyone else
any shortfall is debt on employer. To protect funding position on MFR basis will need an appropriate investment strategy
based on mix of UK Equities and UK long term gilts
so any overseas diversification would be a risk to funding position

Legislation will however change in next five years
what is current correct investment strategy may no longer apply

To avoid debt problems should target funding for surplus
which will increase immediate costs
and may tie up assets in the scheme

Company accounting will be based on FRS17
which determines any debt shown on balance sheet
FRS17 based on corporate bonds therefore least risk investment strategy would be UK corporate bonds
this conflicts with MFR debt position
and ongoing funding trying to maximise returns

May be difficult to fund at same rate as previous scheme if membership profile significantly different.
Rate in previous scheme may be a combination of future rate plus adjustment for surplus
This can not be matched unless bulk transfer includes share of this surplus

Previous scheme may fund using basis which is not conservative
therefore increased contribution rate may be required to protect debt position
and volatility of contribution rate

Further information required would include details of bulk transfer basis
terms under deal
membership profile
data to determine potential bulk transfer
current scheme funding position
current scheme funding basis
priority placed by FD on the three conflicting criteria
expected future changes in workforce

If fund for, or otherwise generate, surplus may have trouble extracting value of it on sale in 5 years
Contribution rate current under old scheme may be out of date/in need of review.
Can influence some aspects of imminent experience – salary growth, early retirements
Insure death benefits to remove that risk
Legislative changes cannot be avoided if they should change liabilities.

If don't admit new employees (or previous scheme didn't) rate may not readily be the same.
Can't be sure of the basis on which the "no deficit" in 5 years time will need to be determined as depends to some extent on sale negotiations then.
Data requirements include benefit basis under ceding scheme.