Faculty of Actuaries **Institute of Actuaries**

EXAMINATIONS

September 2004

Subject 404 — UK Fellowship Pensions

Paper One

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.

M Flaherty
Chairman of the Board of Examiners

7 December 2004

1 (i) Investment risk passes from the company to the scheme members

DB scheme has poor funding position, e.g. due to fall in market value of investments

Giving rise to escalating and uncertain funding requirements

And possibly requiring large lump sum inputs in the short term

DC expenses may be lower, e.g. administration costs, cost of advisers etc.

Implementing FRS17 gives rise to volatile impact on company accounts for DB schemes

Consistent with the actions of competitor firms

DC schemes perceived to be fairer for early leavers

And possibly easier to explain to potential members

Eliminates potentially generous and expensive options built into scheme rules, e.g. for early retirements

Concerns about the possible impact of future legislative requirements on DB schemes

Easier to tie in with the provision of "cafeteria" style of benefit provision overall

(ii) Advantages:

Possible improvement in value of benefits for early leavers, e.g. value may be given for company contributions for leavers within 2 years

Members gain benefit of good investment performance

If scheme has contracted out facility, can choose whether to contract out or be a member of state second tier

For any period of contracted in service, state benefits are outside revenue limits

Possible options to choose own investment medium, e.g. for "green / ethical" investors

Option to decide how much investment risk to take

Possibility of annuity drawdown

Disadvantages:

Loss of DB guarantees

Likelihood of lower benefit package overall (depending on benefit packages)

Particularly for those who stay in service to retirement

Members bear risks of poor investment performance

Members bear risks of the terms on which the fund is converted into pension at retirement

Members likely to bear a share of investment and administration costs

Less likelihood of discretionary increases in course of payment

A straightforward question - most candidates who answered scored highly.

2 (i) Segregated fund — advantages:

Full control over choice of mix of assets between various sectors

And choice of individual assets within each sector

Full benefit of good investment performance

Costs of managing own pool of assets is cost effective for large schemes

Can arrange asset / liability modelling

Segregated fund — disadvantages:

Costs of managing own pool of assets may not be cost effective for small schemes

No investment guarantees

Provision of services, e.g. admin, actuarial, documentation needs to be arranged separately

Insurance company managed fund — advantages:

Direct exposure to investment markets without the necessity to invest in individual stocks

Gain benefits of diversification

Explicit scale of investment expenses

As part of package, may be able to arrange for the insurance company to provide various services, e.g. admin, actuarial, documentation

Can arrange certain level of asset /liability modelling, e.g. fixed interest fund to back pensions in payment

Insurance company managed fund — disadvantages:

No investment guarantees

Income reinvested, so not available for cashflow without disinvestment of assets

Investment expenses may be higher than for a private fund, especially for a large fund

Insurance company may not provide full range of support services, so some of these may need to be provided separately
Fixed interest fund may have wrong average term to match annuity profile

With profit contract — advantages:

Smoothed investment returns

Provision of certain investment guarantees

Possible provision of guaranteed annuity options

Generally offer integral package of services e.g. admin, actuarial, documentation

With profit contract — disadvantages:

Depending on bonus structure, may not gain immediate benefit of market rises

In falling markets, may be subject to market adjustments on monies disinvested

Surrender penalties, e.g. if block of money moved to alternative investment medium

Income / dividends from underlying assets reinvested, so not available for cashflow

Charges implicit and may be disproportionately high, especially for a large fund

(ii) Assets available if contributions to with profit contract cease

Factors affecting future bonus rates

Surrender value available

Enhancements available if assets switched to in house managed fund

Compare discounted value of with profit assets, allowing for expected future bonus rates, with the alternative surrender value offered

Guarantees available under with profit contract

Impact on cost of services e.g. admin, actuarial, documentation

Part (i) of this question seemed to be answered relatively well. Most candidates focused on the investment options in the question. The better candidates considered items such as the reinvestment of income, and detailed how the size of the scheme determined whether particular options had relatively higher or lower expenses.

Part (ii) of this question was poorly answered by the majority of the candidates. Most candidates came up with very few factors for consideration. Many candidates considered standard answers rather than focusing on the specific issues relating to moving assets out of a with profits investment.

3 (i) Actuarial advice should be taken.

Steps being taken to address ongoing shortfall.

Will company top-up theoretically reduced transfer values on a PAYG basis.

Level of transfer activity actually proceeding to payment.

Legislative constraints.

Trust Deed & Rules, in particular any priority order for preferential liabilities.

Acting in the interests of all members.

Is scheme likely to wind-up shortly?

Members expectations.

(ii) Cash equivalent Valuation Balance Sheet

		£'000's
Assets:		12,000
Liabilities:		
Pensioners:		6,061
Deferreds:	$4{,}000 \times 1.005^{-15}$	= 3712
Actives:	$5{,}000 \times 1.015^{-20}$	= 3712
Total		13,485

(a) Overall funding level
= 12,000 / 13,485 = 89%

One possible reduction = (100 – 89)% = 11%

(b) Treating Pensioners as a priority category and stripping them out.

Assets: 12,000 – 6,061 = 5,939

Liab's:	DP:	3,712
	Actives:	3,712
	Total	7,424

Funding Level = 5,939 / 7,424 = 80%

Another possible reduction = (100 – 80)% = 20%

Other assumptions: Expenses of paying/calculating transfer values are ignored (or included within the financial assumptions)

Demographic assumptions cash equivalent vs. ongoing are identical.

Average term to NRD is not distorted when weighted by the relevant liability.

(iii) Stating reduction percentage

Suggest when 100% transfer values likely to be restored.

Detail steps being taken to rectify situation e.g. increased contributions.

Why reduction necessary e.g. protection of non-transferring members' rights.

Still entitled to full deferred pension

Generally a very well answered question. In part(i) the better candidates considered the wider factors for consideration – such as the need for actuarial advice, the steps being taken to address the ongoing shortfall, and whether the company would top-up theoretically reduced transfer values. Whilst most candidates identified the need to treat remaining members fairly, fewer balanced this with the need to offer members who wished to transfer the appropriate cash equivalent

Most candidates presented reasonable answers to part (ii) of the question, especially relating to the calculations. The better candidates also carefully detailed their assumptions.

4 (i) Trustees investment objectives represent best judgement to meet liabilities given likely pattern of future contributions

Taking account of attitude to risk

Asset allocation reflects fund's full range of investment objectives

Guidelines and restrictions set out in Statement of Investment Principles

Statements from A, B and C respectively cover specific risks, but do not cover all prospective beneficiaries

A: Index-linked returns volatile in short term due to supply and demand

But guaranteed returns if held to redemption

Good correlation with earnings growth over long term with low volatility

So can be match for salary related liabilities

Good match for MFR liabilities close to and after retirement

B: Fixed interest suitable for matching liabilities fixed in monetary terms

But not salary related liabilities

Possible return subject to consideration of credit risk

C: Equities likely to produce significant real return in long term

Suggesting that they may be broadly suitable for liabilities related to salaries and prices

Though some evidence suggests correlation between equity returns and salary inflation may in fact be weak
Equities not suitable for matching liabilities fixed in monetary terms

Can be used to help match MFR liabilities for younger members

Investment in European stocks leads to currency risk

Which will remain if the UK doesn't join the euro

Even if we do, not all European stocks denominated in euros

(ii) The trustees should consider the following asset classes, subject to overall investment objectives and trade off between risks and rewards

and consideration of results of asset / liability modelling

and contribution towards stabilising MFR funding level for different categories of member

UK equities, reasonable range, 30% to 50%, say
 Long term real return
 Possibly better long term return than other asset classes

Overseas equities, reasonable range, up to 20%, say
 As for UK equities, but with a currency risk

UK property, reasonable range, up to 15%, say
 Similar to equities, but lower volatility

Fixed interest, reasonable range, 30% to 60%, say
 Gilts, to match fixed liabilities
 And assist in matching benefits that increase according to a price index
 Corporate bonds
 As gilts, but with a credit risk

Index linked gilts, reasonable range, up to 20%,say
 Good correlation with earnings growth

Cash, % as required
 To meet immediate liabilities
 e.g. admin costs, transfer values, retirement lump sums

This question was quite poorly answered by many candidates.

In part (i), few candidates covered some of the obvious points stemming from the details of the question – such as the diversification risks with the suggested strategies, and the factors relating to corporate bonds and overseas equities in particular. Candidates that considered these details given in the question scored reasonably well. A small number of candidates spent a long time detailing all of the contents of the SIP – this was not appropriate given the wording of the question and the marks available.

In part (ii), the poorer candidates only gave broad investment strategies without considering all the available asset classes. The better candidates backed up their suggestions with reasons, as asked in the question.

5 **Specify the problem(s)**

- He has benefits currently of value €1.8m on a transfer basis; value may even be higher on the statutory basis for valuing benefits

- Even if no future accrual, these will increase in value as he approaches retirement (DB) or with investment income (DC), and will probably exceed €2.0m

  - So he is likely to suffer some penal tax unless existing benefits over €2.0m can be "banked"
  - ..or there is a high level of indexation on the €2.0m

- ..or he can persuade his former scheme to settle the tax (unlikely?)

- So it is likely that he will receive less net income from benefits accrued to date than he might otherwise have expected

- As the €2.0m is a lifetime limit, any defined benefit pension provided by the new employer is also likely to incur the penal tax charge

- ...but he has an opportunity to try to negotiate a package with his new employer that will leave him "no worse off" than if the limit didn't exist

Decisions to be taken

Need to decide what to do with his existing benefits

- keep as DB or transfer to some sort of DC arrangement?

  - DC for simplicity of knowing where he stands relative to the limit
  - DB for known gross benefits but uncertain tax charge/net benefits
  - How should funds be invested if DC (invest to match increases in limit or still look to maximise returns, notwithstanding additional tax charge?)

- Transfer to new employer or leave where they are? (if transfer, more likely that new employer/scheme might cover the additional tax charge?)

Need to negotiate on form and level of "pension" benefits from new employer

  - Retirement benefits
  - Other related benefits traditionally provided in pension scheme (e.g. death benefits, ill-health pension)

- Possibility of maximising pension accrual before the date the limit is introduced if existing funds over €2.0m can be "banked"

  Need to consider risks to member of switching to non-pension provision

- Salary-linkage of benefits at retirement lost
- Longevity risk transferred to individual
- Investment risks transferred to individual
- Security may be reduced (if alternatives are deferred, unfunded or linked to health of employer)
- ...so, should individual seek more than ££ equivalent of value of pension to compensate?
- employer may argue that pension wasn't fully secure either?

Information we need.......

About the individual

- Current circumstances
  - Whether he has dependants (spouse, partner, children)
  - Other wealth (investments, property, share options etc.)
  - Any other approved pension benefits?
  - Current outgoings
- Future expectations
  - Likely changes in above
  - When does he expect to retire?
  - What standard of living does he expect at retirement?
  - How long does he see himself in this job?

Knowing the above will help us understand

- Constraints on flexibility to select benefit package

- or need to provide protection benefits separately (e.g. if extra salary is substituted for pension)

- Need for diversification of investments

- Preference between long-term savings and immediate income

- Desire for security of benefits

Also need to know more about existing pension

- Is he already subject to some form of limit on tax-approved pension provision?

- If so, did previous employer provide unapproved pension benefits or cash/other benefits as compensation (or nothing)?

- ..i.e. what is his expectation of approved/unapproved pension provision (irrespective of introduction of the new limit)?

- Any favourable early retirement terms not allowed for in the transfer value (can increase benefits in value from €1.8m to significantly more than €2.0m and might create unexpected penal tax charge?)

About the New Employer

Assume that the new employer wants the package to be attractive the individual
... but at an acceptable level of cost

- May have very specific objectives about how they want to structure the rewards for this individual however?

  – Long lock-in, or fully expects them to move on in 3-5 years?
  – How much of the package should be performance related?

- Will want to consider

  – Available tax concessions

  – Costs (admin & management time)

  – Requirement to disclose senior employees benefits packages

  – Benefits provided to other senior employees (if compensates this individual for penal tax charge, what about existing staff in similar situations)

  - What should the individual contribute to the cost of providing benefits (particularly if pension scheme was contributory but taking future benefits in a different form)

- What does any draft contract promise in respect of pensions (particularly if prepared before the limit was announced)?

About how the limit will operate

- Any grandfathering (banking of existing benefits in excess of the limit)?
- How will the limit increase?
- Will there be an annual limit on future accrual?
- Who settles the tax and how?
- Factors for valuing DB pensions?
- How "penal" is the penal tax rate?
- Any other restrictions being introduced e.g. on earliest age at which retirement benefits can be taken

The better candidates considered the bigger picture and then focused on the various aspects of this picture in their answer. Candidates who scored less well seemed to follow a fairly scattergun approach to tackling this question, diving straight in, just listing standard information needed for giving individual advice or trying to find some hook to which "prepared" answers could be attached (e.g. lengthy discussions of the merits or otherwise of transferring and what benefits might be offered, with little attempt to link their answers to the issue of the changes to revenue limits).

The examiners suggest the following as possible approaches to generating solutions to such a question in the future:

- *Perhaps use the actuarial control cycle as a structure for the answer, i.e. specify the problem(s), consider the solution, the external environment*
- *note down all the parties involved and consider the problem and solution from their point of view (in advising an individual, considering in advance the likely views of the employer would strengthen the individual's hand in any negotiation)*
- *when listing information, state why it is needed and/or how it will be used (this will demonstrate your understanding of the issues, and help you generate further points)*

6 (i) **General / Constraints**

Assumptions are the responsibility of the directors, but they should be seen to be taking actuarial advice.

Auditor's look for consistency year to year.

Consistent level of prudence.

Assumptions should represent a best estimate of the likely cash flows emerging.

Financial

(a) Discount rate — set with regard to the yield on AA rated (or equivalent) corporate bonds of appropriate currency and term to that of the liabilities.

Will be a range of bonds fulfilling above criteria.

Therefore could move to the higher yielding end of the range (if not already there).

But need to consider consistency with previous year.

(b) Expected return on assets — affects the STRGL (& ultimately profit and loss a/c) but not the balance sheet.

Therefore presumably less of a concern to the FD.

(c) Inflation — very little flexibility, prescribed methodology, market derived. (Fixed vs. Il gilt yields).

(d) Salary inflation — scheme specific and hence some flexibility represents realistic **long term** estimate and so unlikely to change much year on year.

Unless company remuneration structure and/or pensionable pay definition changes.

Often in line with funding valuation.

Demographic

All the demographic assumptions should be realistic, best estimates.

Would often be in line with corresponding assumptions in the last funding valuation, but could strip out margins of prudence.

Therefore some limited scope for "tweaking" particularly if last funding valuation some years ago and recent experience indicates a less cautious approach.

(ii) (a) Salary experience only affects actives.

Expected actives liability 31/3/04

$= (1 + 0.25) \times 1.055 = 1.32$

(i.e. Accrued + 1 year liability + interest)
Actual Liability = 1.30
Therefore actives gain = 0.02m

As no new entrants or benefit outgo from actives then all the gain must be from salary experience.

Salary gain = 0.02m
Estimate salary growth = $({}^{1.3}/_{1.32} \times 1.0425) - 1 = 2.67\%$

(b) Expected assets at year end:

Average return = $0.4 \times 5.0\% + 0.6 \times 7.0\% = 6.2\%$

$2.4 \times (1.062) + (0.35 - 0.08 - 0.02) \times (1.062)^{½} = 2.81\text{m}$

Assumes cashflows on average half way through year

Gain = Actual – Expected
= 2.2 – 2.81
= 0.61 loss

Estimated actual return
$({}^{2.2}/_{2.81} \times 1.062) - 1 = -21.7\%$

(iii) (a) Total liabilities on 5.5% discount rate = 3.22m
Total liabilities on 6.25% discount rate
$= 3.22 \times ({}^{1.055}/_{1.0625})^{14} = 2.92\text{m}$

Balance sheet:

Market Value of Assets £2.2m
PV of liabilities £2.92m
Deficit £(0.72m)

(b) Total liability after change in (a) = 2.92m. Could proportion as before, therefore

Actives = $1.3 \times {}^{2.92}/_{3.22} = 1.18\text{m}$

OR

As FWL of actives = 18, then likely the mean term of actives liabilities is >18, so credit given for sensible estimated actives liability e.g. $1.3 \times ({}^{1.055}/_{1.0625})^{20} = 1.13\text{m}$, or in range 1.1m to 1.2m

Effect of salary change
$1.13 \times (^{1.0275}/_{1.0425})^{18} = 0.87$
saving 0.26

New balance sheet
Market Value of Assets £2.2m
PV of liabilities £2.66m
Deficit £(0.46)m

(iv) Changes achieved desired result, deficit is close to (actually below) previous years disclosure.

Discount rate now 0.5% above median yield vs. equal to median previous year.

Not very consistent, may be difficult to convince auditors.

Leaves no margin for future years.

Large jump.
Also given typical corporate bond spreads, likely to be very new the top end of range now.
Discount rate higher than expected long term return on bonds and cash — looks odd, difficult to justify.

Salary inflation has been set (approx.) equal to actual rate in previous year.

But rate should be long term.

Very close to inflation, which evidence would suggest is imprudent / unrealistic over the long term.

Again no margin at all or scope for reduction in future years.

Basis when taken as a whole now too optimistic.

In part (i), only the better candidates considered all the relevant assumptions, including demographics, and discussed the need for consistency from year to year in each case. A few candidates suggested the discount rate under FRS17 can include an allowance for expected out-performance on equities.

In part (ii), many candidates failed to estimate the salary growth or investment return over the year. The lower scoring candidates made simple errors, such as including the actual investment income in their calculation of the expected asset value.

Part (iii) was quite well answered, with most candidates demonstrating a sound ability to perform these kinds of estimations.

Part (iv) again separated the stronger candidates from the weaker ones. The poorer candidates tended to state that the suggested basis changes were acceptable, listing reasons why the Finance Director may be making these changes. The better candidates considered *the lack of consistency from year to year, and stated the reasons why they (or the auditors) might be uncomfortable with the proposals.*

END OF EXAMINERS' REPORT