Subject ST1 — Health and Care
Specialist Technical

EXAMINERS' REPORT

September 2008

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

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General comments

Candidates who approached the questions, especially the more substantial elements of each question, in a methodical and detailed manner were far more likely to satisfy the examiners and receive a pass in the subject. There was often a lack of sufficient detail in the answers. In general each valid point in the answer would normally attract 0.5 marks with the more basic elements e.g. details in a pricing basis such as age and sex, attracting 0.25 marks.

Candidates should also recognise that whilst reinsurance can play a valuable role in the UK health insurance market, reinsurance is not a panacea for all evils.

1(i) Additional benefits include:
Hospitalisation benefit
Lump sum TPD benefit
Critical illness benefit
Terminal illness benefit
Unemployment waiver of premium benefit
Health waiver of premium benefit
Death benefit
State benefit option
Fatal accident benefit
Some form of maturity guarantee e.g. return of premiums
Increase options/escalating benefits
Unemployment cover
Rehabilitation assistance
Proportionate benefits
Continuation option/guaranteed insurability
Waiver of pension/state health benefit contribution

1(ii) Reasons for offering benefits in addition to the standard income protection benefits include:
Marketing – enhancing the brand name
Meeting needs
Allays fears
Competitors are offering them
Differentiation from competitors
Statutory requirements
Request from distribution channels
Profitability
Treating customers fairly
To make product more attractive – selling a higher volume
Increase total premium income
Assists return to work

2(i) *One possible approach is outlined below. Marks were also given for other approaches and reasonable assumptions, for example the treatment of the global reserve of £20m.*

Assuming that there is no maximum retention on individual policy
Reinsurance arrangement does not cover miscellaneous reserves

<u>All figures in £m</u>

<u>Term Assurance</u>
Gross reserves = 500
Gross sum assured = 20,000
Net reserves = 500 * (1 – 0.6) = 200
Net sum assured = 20,000 * (1 – 0.6) = 8,000

Accelerated CI
Gross reserves = 350
Gross sum assured = 10,000
Net reserves = 350 * (1 – 0.8) = 70
Net sum assured = 10,000 * (1 – 0.8) = 2,000

Global
Gross reserves = 500 + 350 + 20 = 870
Gross sum assured = 20,000 + 10,000 = 30,000
Net reserves = 200 + 70 + 20 = 290
Net sum assured = 8,000 + 2,000 = 10,000
Gross capital at risk = 30,000 – 870 = 29,130
Net capital at risk = 10,000 – 290 = 9,710

Reinsurance factor for reserves = Max (85% , 290/870) = 85%
Reinsurance factor for capital at risk = Max (50% , 10,000/30,000) = 50%

Adjusted mathematical reserves = 870 * 85% = 739.5
Adjusted capital at risk = 29,130 * 50% = 14,565

Insurance expense risk capital component
= 1% * 739.5 = 7.395

Insurance market risk capital component
= 3% * 739.5 = 22.185

Insurance mortality risk capital component
= 0.3% * 14,565 = 43.695

Total CRLTI = 7.395 + 22.185 + 43.695 = 73.275

2(ii) Both reinsurance factors are 100%
Gross capital at risk = net capital at risk = 12,000 – 360 = 11,640
Gross reserve = net reserves = 360

CRLTI = 1% * 360 + 3% * 360 + 0.3% * 11,640 = £49.32m

2(iii) Global
Gross reserves = 870 + 360 = 1,230
Gross sum assured = 30,000 + 12,000 = 42,000
Net reserves = 290 + 360 = 650
Net sum assured = 10,000 + 12,000 = 22,000
Gross capital at risk = 42,000 – 1,230 = 40,770
Net capital at risk = 22,000 – 650 = 21,350

Reinsurance factor for reserves = Max (85% , 650/1,230) = 85%
Reinsurance factor for capital at risk = Max (50% , 21,350/40,770) = 52%

Adjusted mathematical reserves = 1,230 * 85% = 1,045.5
Adjusted capital at risk = 40,770 * 52% = 21,200.4

Insurance expense risk capital component
= 1% * 1,045.5 = 10.455

Insurance market risk capital component
= 3% * 1,045.5 = 31.365

Insurance mortality risk capital component
= 0.3% * 21,200.4 = 63.601
Total CRLTI = 10.455 + 31.365 + 63.601 = 105.421

2(iv) Existing reinsurance proportion exceeds maximum reinsurance benefits allowable
Target company does not have existing reinsurance arrangement
Part of the reinsurance benefits which were not allowable prior to the merger could now be utilised

2(v) Other possible synergies include:
Expense synergy
Tax
Reserving
Investment
Resilience test
Brand name
Distribution
Marketing
Diversification of risk – product
Diversification of risk – geographical
Diversification of risk – business profile
More stable overall profits
Underwriting
Claims process
Credit rating
Capital availability
Lower cost of reinsurance because of higher volumes
Expertise and knowledge sharing
Opportunities for cross selling

3(i) Replacement ratio, in the context of income protection insurance, is the ratio of post-disability income to pre-disability income.
Post-disability income should include state benefit payments
Gross refers to the replacement ratio being calculated on a ratio of gross income to pre-disability income.
Net refers to the replacement ratio being calculated on a ratio of net after tax income to net after tax pre-disability income.
A value less than one is desirable from the insurer's viewpoint,
to provide a financial incentive for the claimant's return to work,
especially given that expenses in disability may be less than those in normal (working) health (although this would not always be the case)

3(ii) The total benefit paid by the insurer in the event of a claim is 85% of pre-disability salary
i.e. the gross replacement ratio is 85%
As income protection benefits are tax free, the net replacement ratio is likely to be in excess of 100%, depending on the tax rate
The high benefits may produce a higher claims incidence
With a corresponding poor recovery rate to return to work for short term claims
And a very poor recovery rate for long term claims in view of the 10% p.a. benefit increase during claim
Provided that the RPI or similar inflation rate is modest
If benefits are in excess of free cover, careful medical underwriting will be needed
Own occupation' is a weak definition which may lead to high incidence rates
It is possible that in the event of a claim that the employee will not pay over the pension fund contributions to the company and this will also be a factor in reducing the recovery rate (as would how the 15% pension contribution compared to actual pension contributions)
The claims experience will depend on the health of the employees; if the claims department is good, the claims experience may not depend on benefit structure
Salary is only one element of remuneration for senior staff, who might also receive significant bonuses and share options. Hence the impact on inceptions and terminations may not be as high as it appears. Also, senior management may feel a moral obligation to return to work.

3(iii) The total benefit paid by the insurer in the event of a claim is the same as before so no effect on short term claims
However, there may be an impact on the propensity to claim
Claimants who are receiving benefit from about 3 years onwards will be looking to stretch their claim to five years so that they can receive the lump sum payment
Consequently the recovery rates under this scheme will drop away from 3 years onwards
However, some people may value their jobs as higher than the lump sum benefit payable and hence return to work earlier.
The insurer will need to consider whether the incapacity definition for the lump sum benefit should be on a stricter definition
such as ADLs, FAT etc.
Although the income payments are made for a shorter time, there is the effect of the lump sum benefit so careful medical underwriting of benefits in excess of free cover is desirable
If any element of the scheme is reinsured, the reinsurers will need to be consulted to see if the risk should be accepted
It is not clear whether someone starting to receive benefit over age 60 qualifies for the lump sum benefit
The lump sum at five times is too generous at older ages
And could be improved at younger ages
The over-generous benefits at high ages may be exacerbated by morbidity rates increasing with age and /or the profile of those covered (senior management)
Costs may be lower because of loss of the 10% escalation of benefits (counteracted by no apparent discounting applied).
What is the need being met by such a product design?
Are there any age discrimination issues?

May need to change system/administrative processes
There may be tax or regulatory issues.

4(i) Possible ways in which a life insurance company can obtain underwriting information about a person making an application for a health insurance contract and the information that might be sought include:

Proposal Form

Applicant has to provide information about (main points):
current health,
medical history
age
sex
height
weight
contract applied for
and size of benefit
lifestyle
e.g. smoking, alcohol consumption, hazardous sports,
family history information (any early deaths of close relatives due to cancer, heart disease, stroke etc.)
occupation
country of residence
whether special terms have been applied by other insurers
or insurance has been declined
financial information
(e.g. salary)

Medical Attendant's Report
Confidential report written by applicant's doctor; gives account of medical history and an opinion on the applicant's current health

Medical Examination
Applicant is required to undergo a medical examination by the company's Chief Medical Officer (or substitute).
Gives very precise (and unbiased) information about current state of health.

Details of other relevant insurers

[There are other items such as lab tests, Chest X-Ray, ECG for which credit was given]

4(ii) All three are not sought in many cases because it may not be necessary and therefore leads to an unnecessary expense.
Majority of applicants can be judged as a standard risk from proposal form information.
The few higher risks, which slip through can be tolerated provided sums assured / benefits are not too high.
Adverse information given on a proposal form will automatically trigger either or both a GP report or a medical examination.
A GP report may also trigger a medical examination.

Sum assured or benefit higher than the company's chosen threshold will automatically trigger a GP report and a medical examination even if proposal form is clear.
As medical examination is the most expensive item, the threshold for automatic use is higher than a GP report.
Hassle factor: potential policyholder may give up on the application
Other valid points include:
In general, companies have to decide on their automatic criteria for decision.
Automatic limits will vary by type of product.
May be influenced by reinsurer demands on rating etc.
Regulatory requirements/constraints
If the expected present value of the future extra premiums received from the use of a lower threshold exceeds the cost of obtaining the extra information, the threshold should be lowered.
Conversely, with inflation of costs, thresholds generally rise over time. The insurer will assess whether the loss of future extra premiums for a given rise in threshold is less than the reduction in cost, then the limit should be raised

4(iii) The options are
could be insured at standard rates
could be offered higher (loaded) premium/reduced benefit
could postpone a decision (e.g. when long-term prognosis is uncertain but should become clearer at a future date)
could decline insurance (if additional risk is thought to be too high)
could offer a different (less risk intensive) type of policy
could offer to a reinsurer facultatively with zero retention
could apply a claim exclusion for particular causes

5 The principal methods are:
Capitation basis
This is the practice of charging for cover by forecasting the likely claims on an individual basis
and charging this, adjusted for expenses and profit, as the premium.
In effect, the insurance company "carves out" dental claims and passes this risk onto the provider,
by giving a proportion of the insurance premium for each person managed to the dentist up-front rather than an amount per claim.
The dentist estimates the cost for each patient
Risk to the dentist is twofold: the number of patients requiring treatment may be higher than expected and the cost of treatment increases faster than expected.

Indemnity basis
where the insurer covers pound for pound of treatment delivered
subject to any excess or policy limits
Insurers work closely with dentists to ensure that applicants are screened initially for pre-existing conditions or imminent treatment,
and to ensure that dental intervention thereafter is in accordance with risk expectation

Pre-existing conditions or imminent treatment may be excluded at outset. (e.g. for indemnity version)
On a group scheme of sufficient size, dental history may be disregarded

6(i) Details of the pilot study, proportion of the population to be tested by
Sex
Age group
Occupation – socio-economic class

Size of CI portfolio
Details of the ALH CI portfolio split by
Policy type
Sex
Age group
Occupation – socio-economic class

Details of the products covered
Policy documents
Sales literature
Any relevant regulations on paying claims
Are policies reviewable or renewable
What guarantees have been given
Reinsurance terms

Details of the incidence of bowel cancer in the population
Details of the incidence of bowel cancer in the ALH CI portfolio
Details of changes in bowel cancer incidence after similar studies in other countries, if available
Split by Country

In each case data should be for a period sufficient to be credible eg 3 - 5 years and split by sex, age group and occupation – socio-economic class, if possible

Forecasts of the increase in incidence of bowel cancer in the population expected as a result of the pilot study
Split by Sex, Age group and Occupation – socio-economic class

Reinsurers' data
Other industry data
Details of historic diet and expected future dietary changes
Assessment of accuracy of predictive test
Relationship of bowel cancer and other cancers and between cancers and fast food diet

6(ii) Claims diagnosis will be brought forward
but unsure how it will impact by sex and age group
Differential impacts can be expected by socio-economic class
Western diet is more expensive and the change in diet is the likely contributory factor

High value policy is likely to be much more affected
If the policy is standalone CI, then the claims numbers will increase as deaths due to undiagnosed colon cancer within survival period will reduce
May also need to make allowance for any possible government intervention on diet or dietary advice

6(iii) As claims diagnosis will be brought forward if the pilot study is rolled out to the entire relevant population
the pricing model will be adjusted by sex, age group and occupation – socio-economic class
If the link to fast food is proven, then a deterioration of claims experience over the life of the policy should be factored into the pricing
Differential impacts can be expected if the impact of fast food continues to increase in the population
With the low value policy becoming affected
Although the price may be expected to increase
actions of competitors will also be a factor

6(iv) Impact on claims experience on proportional business will be the same as for the direct writer
Impact on claims experience on non-proportional business may be exacerbated because the higher value business is the most likely to be affected.
This is likely to cause reinsurance premiums to increase.
Depending on the materiality of the increase, this may reduce the amount of critical illness reinsurance sold.
However, it is possible that companies might increase their levels of reinsurance due to the uncertainty regarding future bowel cancer trends.
If it writes reinsurance business in countries other than just Arcadia, then the reinsurer may have more detailed additional information from other countries which have experienced similar dietary changes, which will help it price more accurately.

7(i) Show the financial effect of divergences between the valuation assumptions and the actual experience
Show the financial effect of writing new business
To identify non-recurring components of surplus
To give information on trends in the experience of the company
Provide an independent check on the valuation data and process

7(ii) Validate the calculations, assumptions and data used
Reconcile the values for successive years
Provide management information
Provide detailed information for publication in the company's accounts
Help set executive remuneration

7(iii) Improving the pricing basis
Establishing/revising the reserving basis
Changing/improving the marketing message

Revising training of staff and distributors
Selection of distributors
Revising wording and format of literature
Revising the mechanics of commission payments and clawback
Providing adequate numbers of staff
Revising underwriting processes
Revising claims handling processes
General capital management
Improving the systems and data recording processes
Rewording of policy contracts to remove hidden mistakes in policy design which have surfaced
Investment strategy
Reinsurance strategy
Lapse/retention management
Expense management/budgeting
General product design
New business strategy (which lines to target)

7(iv) The market average will not represent your mix of business by product and this will impact expense levels
Your methods of business generation will differ from the market average
In particular expenses will differ significantly between companies selling mainly through telesales/internet and those generating business otherwise
Your commission levels will differ (unless there are regulation-imposed commission levels – but even then different business mixes will corrupt the developed factors)
Numbers in accounts will be out of date by the time published
Market figures may represent differing amounts of business abroad which will have different expense levels to the home country
There is an obvious difficulty into turning accounting percentages into meaningful pricing bases (e.g. initial/renewal/claim)
and for splitting per policy/per premium
Difficult to convert to per policy expenses as numbers of policies may not be published
Companies in the market will have a different split between head office (fixed) and sales (variable) expenses.
Published figures may not help with need for expense loadings in claims provision
Currency conversions of expenses incurred abroad or by accounts published in currencies other than the local one will complicate their applicability
Stages of company development will differ – and this will impact their split between initial and renewal expenses
The size of your company may not reflect market average – thus the balance of overhead costs may not be reflected in the derived factors
Your ability to recover commission on lapses (and your agreement/rules for so doing) may be different from the market average
You may have younger staff (lower paid) than the average
You may have fewer professionals e.g. actuaries than the average
You may have special pay scales
You may have schemes for home working which reduces staffing costs
Your normal pension contributions may be lower than the average

Accounting rules may mean that some companies' pension deficit recovery payments are treated as staffing costs which is a problem which your company does not share
Expense cost per premium may be reduced by outsourcing and/or call centres in some companies which will distort the relevance of averages
The cost of computer systems may vary significantly between companies and averages may not help/level of automation of processes
Your products may have features which are less or more expense intensive than those of the market.
Your products may require less or more claims management e.g. insurer intervention in claims approval or settlement quantification
Your company may have special deals with energy suppliers which are not reflected in the market average
The location of offices (particularly HQ) will impact staff salaries
The location of offices (particularly HQ) will impact rental costs whether imputed or actual
There will be differences in your salesmen remuneration depending on whether they are salaried or commission-rewarded and this may not reflect the market norm
Different levels of initial underwriting (this can be quite a significant component of costs)
Published expenses are unlikely to be split by product, so will not be able to derive differentiated loadings for pricing purposes
Not all one-off costs may be identified separately

7(v)

(a) Salaries and salary-related expenses
Large part of expenses are staff-related
In the short term, much of this may remained fixed in real terms
In the longer term, this will vary to meet changing levels of new and existing business
Staff can be split into
Staff whose work relates to one single cell of the analysis can be directly allocated to the appropriate cell
Staff whose work relates to more than one cell, time-sheets can be used to split their salaries between the appropriate cells
Other staff, split in proportion to overheads and direct expenses
Typical cells may be
The whole business of the insurer
The whole business of a particular accounting fund
Each main product line of the insurer
If none of the above are available, other pragmatic approaches could be used

(b) Property costs
If the company owns, as an asset of its long-term fund any of the buildings it occupies
a notional rent charged to the relevant departments
Rent, plus property taxes, heating costs etc., can be split by floor space occupied between departments
And then allocated in accordance to salaries

(c) One-off capital costs
These need to be amortised over the expected useful lifetime of the item purchased
The amortised cost may then be treated as part of the overheads
Some items can be treated as an asset of the long-term fund, e.g. a new head-office building
In which case, a charge, e.g. a notional rent would usually be made instead of amortisation
Exceptional items, which are not likely to recur, would be excluded completely from the analysis

END OF EXAMINERS' REPORT