EXAMINATION

April 2007

Subject SA1 — Health and Care Specialist Applications

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 A Stocker
Chairman of the Board of Examiners

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Comments

Candidates who approached the problems, 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. Generally, candidates lost marks by giving insufficient detail in the answers. The mark allocation for each question part gives an indication of the relative length of answer or number of points to be made to gain full marks. Usually each valid point in the answer would normally attract ½ marks whilst the more basic elements e.g. details in a pricing basis such as age and sex, would attract ¼ marks.

Some papers were not clearly marked as to which part of the question was being answered.

Marks may be lost where answers are difficult to read.

Comments on individual questions are set out below:

Question 1

Part (i) of question 1 was well answered. However many candidates answers referred directly to the UK when the country under consideration is Actuaria.

Parts (iii) and (iv) arose from the current UK market requirement relating to the extension of benefits beyond age 65. The answers were often disappointing, little thought being given to whether insurance might be required.

Many candidates failed to realise that part (v) referred to an existing block of income protection claims where full details of these claims would be known. Many answers just repeated the standard set of assumptions for pricing income protection business.

Part (vii) referred to the requirements of unisex pricing, terms and conditions. Candidates gave their own opinion on the effect on prices but often failed to consider the overall impact of the legislation.

Question 2

The examiners have noticed that in previous examinations the stock answer by the candidate if a difficult risk was offered to a direct insurer was to pass it to the reinsurer. This question posed the problem of what decisions might have to be taken if the availability of reinsurance for a direct insurer were to be restricted.

Part (i) was reasonably well answered but marks were lost in places for lack of detail.

Part (ii) was poorly answered as candidates failed to appreciate the fact that:

(a) the amount of reinsurance was going to be restricted to 5%, and
(b) the reinsurers might not offer in Actuaria in future the full range of reinsurances normally available

Part (iii) answers were often lacking in detail.

Question 3

An actuary specialising in health insurance needs to have a working understanding of the technical and practical issues in underwriting, administration and claims. This question looked at two issues in income protection claims.

Part (i) looked at the relationship of claims management with other departments of an insurer. The question was usually reasonably well answered but again marks were lost in places for lack of detail.

Part (ii) set out some simple scenarios that arise in income protection claims. It was designed to test the candidate's ability to apply the product knowledge to these scenarios. Whilst a few good answers were received, several were not. It was clear that some candidates did not fully understand the product.

1(i) **Employer needs:**

Protect workforce,

Keyman / locum cover

Minimise awaytime

Attracting staff

Tax relief/allowable benefits

Value: cost < Σindividuals

May help the e/er meet statutory payments

Requires cost-effective way of meeting needs

Cap cost if otherwise met from other funds

Employee needs

Replacement income when the insured is off-work
depend on how long the employer will pay and for how long the State will pay and at what levels.

Benefits provided are not indemnities

IP

Finance to speed recovery and provide home help as required.

May provide rehabilitation services to speed recovery
Specific monthly outgoings — include pension contributions, mortgage repayments, policy premiums waivers

CI

To meet cost of expensive healthcare where the State does not provide

- to provide cash for immediate care/surgery where the wait is too long
- to enable more choice of the best consultants/hospital

Will only pay out if illness serious enough to qualify

To offset capital needs on extreme disability
e.g. repayment of a mortgage, the settling of a partnership or the move into specially adapted housing.

Vehicle for early retirement after serious illness
In the event of becoming unable to work ever again, his/her financial welfare will be met.
Need to allay fears on financial destitution following inhibiting disability

1(ii) Group Income Protection will generally be priced using unit rates which are scheme specific.
The unit rate will however be calculated based upon the expected experience of the scheme based upon the insurers previous experience of similar schemes.

or past experience of scheme
and allowing for the profile of the scheme e.g. age, sex, occupation profile.

Some Group Income Protection business may also be single premium costed where rates are calculated for each individual covered.
Book rates — standard age/sex(?)/smoker(?) related risk costs per £1,000 monthly benefit with adjustment multiples to allow for other key rating factors - these are depicted by E in the formula below
Book rates need to be adjusted for variations such as definition of disability, location, employment, voluntary/obligatory, where appropriate
Credibility formula of the sort $Z \times A + (1 - Z) \times E$, where Z is a Bayesian factor to allow for statistical credibility to be afforded to own experience (A).
This would generally be used for cover above the free cover limit

and for partnership schemes.
The experience analysis will be similar to that for individual. Specific differences are highlighted below:

Morbidity
Lack of detailed exposure data, detailed claims analysis being more difficult.
For specific schemes, would analyse their own claims experience.

Potentially use loss ratio analysis.

Look to reinsurer's and market data

Investment
Note short term contract — limits potential for investment of premiums
But there is scope to discount claims which may have 30-year duration

Commission
Note many brokers may be on a fee basis, so may quote net of commission rates.

Generally follow market norm in commission allowed

Lapses

Generally 2 yearly renewable contract.

Analyse expected renewal rate.
Need to be careful if amortising initial expenses beyond two years

Competitors rates
Note there would generally be a competitive tender process but may not be aware of competitors' rates for GIP.

Loadings for

- expenses
- return on capital employed
- uncertainty (to premiums generally and in individual assumptions)
- solvency
- profit margins

Need to load for non-standard benefits (continuation options, benefit escalation, guarantees etc)

Tax

1(iii) Offering GIP benefits past 65

Is there a market for this and how big is it likely to be?
There should be as employer will need to offer similar benefits to employees above 65

Hence will seek insurance cover or will have to self insure

Investigations

- research legal opinion on implications of the legislation
- research employers and brokers views on the likely demand for this and also what is the product that they require.

How does this fit with pension provision?
If pension benefits are paid from 65, then there will be over-insurance.
What about ill health early retirement pensions — how are these affected?

Product considerations

What are the actual product requirements?
Terminal age — should all employers provide all employees with benefits to post 65 or to 65 and for those above 65, then specific terms.

Definitions of incapacity — do the existing definitions seem sensible past age 65 or change to any occupation (post 65) for some occupations?

Motivation to return to work — How do we ensure that individuals are motivated to return to work if older?

With any of the above, need to take care that not discriminatory
However this is an employers issue not that of the insurance company

Pricing considerations — different approach if voluntary or obligatory
Data sources — government, reinsurers, overseas, products offering benefits post 65
All of these would need to be adjusted to the likely experience of this product for the target market in Actuaria

Medical underwriting — review non-medical and other limits
Free cover limits for post 65s

Claims issues

Implementation issues
Additional expenses
Systems requirements

Profitability requirements
Need for margins in rates

May need reinsurance help and financial protection, especially in early years
Competitors response to legislation — careful watch of market rates
Careful post-launch experience monitoring
Changes in sales literature and product documentation

1(iv) Individual IP

Demand in the individual market
Cost more of an issue
Need to investigate likely demand with individuals.

Not legal requirement and so likely to be less demand

Product considerations
Anti-selection more of an issue — as individual chooses whether to purchase or not

Need to be more conservative
Motivation to work without the employers help — more difficult

Declining certain occupations

Revision of underwriting approaches
Greater need for reinsurance — longer liabilities per £ of premium

1(v) Extending from age 60 to 65.

To determine the price we need to place a value on the current liability and then a value on the new liability.
The difference will be the price for extending the claims to age 65.
To do this we need to consider the claim costs, expenses, investment returns and profit/cost of capital. We may need to consider reinsurance.
Should we calculate the current liability under each claim using a case estimate approach

or should we look at the claims using a statistical approach?

Claim cost:
This is an existing block of business and so we will already have a view as to the expected recoveries and deaths (required for example, for calculating EV)

We need to determine whether there is any new data since the basis was set:
Review latest claims experience for the business compared to expected.

Review any new published industry experience.

Existing basis would have been set to apply to the total claims in aggregate. Need to decide whether this is appropriate for the particular block of claims. Will therefore want to compare the profile of the subset of claims with the full claim portfolio. In particular would investigate:

- Cause of claim — are the causes of claims for the subset likely to be of longer/ shorter than average duration?

- Benefit level — how does the average benefit level and benefit escalation rate compare with the average claim?
- How does the age, sex, occupation class, smoker status, definition of disability and duration in force compare with the average claim?

Expenses:
Need to determine the additional expenses. Expenses will be increased because of the expected longer duration of claims.
We also need to consider the expenses of making the change — updating administration records, IT costs, cost of producing the quote, investment expenses.

Investment return:
We will have a notional block of assets backing this business. Extending the cease age will increase the expected duration and we need to determine how the longer duration will change the expected investment rate.

Tax:

Are there any tax implications of the deal?

Capital/solvency margin
We will have a basis for determining the required capital backing the claims. We can therefore calculate the additional capital required. We need to ensure that this capital will be available. The availability of capital is likely to depend on the expected level of profitability of the deal.

Profit measure:
If profitability is measured in terms of return on capital then the return needs to be high enough to attract the capital.
If there are other profit measures (e.g. percentage of premium) then this needs to be factored in to the quote.

Reinsurance:
The existing claims block may be reassured. We need to understand the basis of the reinsurance. Should discuss with the reinsurer whether it would be prepared to take its share of the extended claims and if so what premium it would charge for this increase in reinsurance cover.

Definition of claims:
We need to be clear on which claims are to be covered by the quotation:
What do we do about claims that are currently in the deferred period?

What do we do about IBNR claims?

What do we do about incurred but not reported terminations?

Other factors:

Will commission be payable to any third party?

What happens about linked claims?

1(vi) Typically in the UK critical illness policies do not have a maximum age and so statistics available to age 70 and beyond on UK (if not Actuaria) individual contracts
If do not currently provide, then would be able to consider competitors products

Population data

Reinsurers data

Is there a need / market for this?

If yes, then need to consider likely propensity to buy

Claims criteria for CI more objective than for IP

1(vii) Uni-sex Policies

Need clarity over what this means

Product terms and conditions

Need to ensure policy conditions are uni-sex
Could potentially argue that critical illness covers illnesses more relevant to particular sexes.

IP — occupation related no difference in product terms.

Rates

Individual major issues — rating factor for all products
Determining uni-sex rates — will require assumptions regarding mix of business
Note target markets – ability to use uni-sex rates to competitor advantage

Group — the unit rates are uni-sex

- SP rated cases similar issues to individual
- Voluntary — may be impacted

Different distribution channels

- price differentially based upon likely mix of business
- not having different prices is likely to result in different mixes of business i.e. for IP if cheaper for females then more females buy hence need to allow for future likely mix.

If gender cannot be used as a rating factor then the provider is at risk of the gender mix being different from that assumed in the underlying pricing. This is a risk and additional capital needs to be held against this risk. The capital will have a cost and so premiums will need to increase. Some individuals may then be excluded from cover as they are unable to meet the increased cost.

The government's legislation is likely to only apply to local insurers. Off shore insurers may still be able to use gender (as they are regulated in their home market) and this then creates the risk of antiselection with the better gender seeking cover overseas.

May see a rise in affinity groups

2(i) Details of all products covered, single premiums by product line

Full details of the proposed regulations

Do the regulations apply to existing business or just new business?

Full details for each of the four health insurances of the reinsurance arrangements of AHI including:

Copies of reinsurance treaties

Reinsurance limits (max coverage, retentions, other annual limits)

Recent accounts

Premium bases for reinsurance arrangement

Details of premium income over last 5 years

and claims paid over last 5 years
including details of very large claims or concentration of claims to calculate position if risk had been retained

Forecast premium for new business in 2008 (pre regulation)

You will require a full risk register for AHI

Concentration of risk

Exposure to potential catastrophic events

Exposure to large policies

Details of any financing provided for cash flow purposes

Details of financing for solvency basis
AHI's need for reinsurance in other ways e.g. levels of free capital against regulatory minima, expertise in the four products, tax arbitrage

2(ii) **Overall**

It becomes an ordering of priorities within contracts

AHI needs to look at risk and financing requirements

Stop Loss contracts being of less interest to the reinsurer

as it gives reinsurer volatility and pricing problems

Reinsurance passes profits to the reinsurer

So need to consider the limits on reinsurance available
Assuming that AHI have a full reinsurance programme for each health insurance
Look at exposure for contracts in relation to concentration of risk

PMI

Various Stop Loss covers

If available

Quota share with a treaty

A good way to spread the risk

Facultative

may be available but will not spread the risk
Risk Excess of loss or aggregate excess of loss for large individual risks
e.g. life support machines in the US or catastrophe affecting premises which is covered on group basis

CI
CI is a long term contract so needs long term reinsurance contracts

Quota Share and Surplus

If available

this will spread the risk

and *may* remove volatility from the portfolio

Surplus may not be available on its own

Various Stop Loss covers

unlikely to be available, as a one year contract

IP
IP is a long term contract so needs long term reinsurance contracts

Quota Share and Surplus

If available

this will spread the risk

and *may* remove volatility from the portfolio

Surplus may not be available on its own

Various Stop Loss covers

unlikely to be available, as a one year contract

Extended wait arrangement

LTC
LTC is a long term contract so needs long term reinsurance contracts

Quota Share and Surplus

if available

this will spread the risk

and *may* remove volatility from the portfolio

Surplus may not be available on its own

Various Stop Loss covers

unlikely to be available, as a one year contract

Extended wait arrangement

2(iii) Health reinsurance enables AHI and others to provide a full range of health insurances

With appropriate limits
Restricting the amount of reinsurance means that the maximum covers will be cut

not in the best interests of some policyholders

Financing: Health insurance, especially critical illness, income protection and long term care, can bring substantial up front financing strains.
The commissions paid by reinsurers support the initial development of young and smaller insurers where successful new business would otherwise stretch their available free capital.
Currently a full reinsurance programme with a financially viable reinsurer

underpins the financial stability of the Actuaria Health Insurers

Health insurance has a high rate of claim

so the current reinsurance programme limits the loss on foreign exchange to the level of the profits repatriated by the reinsurer
Insurers only reinsure because it is a viable business proposition

Tax Arbitrage: The insurance tax regime in the reinsurer's country may be different enabling the reinsurer to accept risks from Actuaria insurers with lower margins than might otherwise exist in the pricing basis.

Solvency Arbitrage: The regulatory capital which the foreign reinsurer is required to maintain to demonstrate solvency may be less per unit of risk than in Actuaria, thus permitting the reinsurer to price a policy more cheaply than AHI.

As a result of tax and solvency arbitrage, significant reinsurance will result in cheaper premiums for the citizens of Actuaria, as our local insurers pass these benefits to their policyholders.
This will encourage your people to make their own financial provision for ill-health and relieve pressure on Government funds

Data: While Actuaria has a thriving health insurance market, few individual insurers have sufficient statistics to provide credible input for disability product pricing and reserving. Reinsurers have access to international databases which can thus enable health contracts to have appropriate premiums and robust reserves which will help to ensure market stability.

Ideas: On a similar vein, reinsurers bring international ideas to Actuaria and back them with statistics and underwriting and claims processes.

This happened in Actuaria with Critical Illness some years ago.

Training: Reinsurers have for long been trainers of our claims and underwriting staff
They run courses and seminars in many aspects of the insurance cycle.
This would/might cease if their involvement in the marketplace were severely restricted.

Unusual complex risks: Reinsurers permit the more difficult risks to be underwritten, which otherwise Actuaria insurers would be forced to decline.
The new restrictions on reinsurance volumes may make the latter happen and thus make some citizens uninsurable.

Reinsurance helps to reduce volatility in terms of individual large claims (through excess of loss reinsurance) and in terms of aggregate loss (through stop loss arrangements)
International reinsurers may exit the market - in this case need to encourage local reinsurers to fill the gap.

3(i) **Pricing**

Interaction
CMs will provide analysis of rates of claims' incidence to feed back into pricing exercise
CMs will provide analysis of claims in payment to enable pricing actuaries to cost IP new business.
Pricing actuaries will have dialogue with CMs to understand the future strictness of CMs' approach so that this can be applied to pricing mechanism

Underwriting

Interaction
CMs will consider carefully the underwriting analysis performed at the time when the policy was accepted.
Particular attention will be paid to the pre-existence of the condition for which the claim is now being made — was this declared? To what extent was it linked to what was declared?
Liaise with underwriters, application-form designers, product developers to tighten wording to reduce anti-selection.
CMs will investigate the loadings being applied by underwriters and compare these with the additional claims arising, to assess adequacy of these loadings.

Product design

Interaction
CMs would need to be fully aware of the product claim conditions — both the legal context and any intended discretion above this.

CMs would not want to incur unnecessary litigation costs
Equally would not want to be too lax in accepting claims and thus giving wrong message to other policyholders (current and potential)

Experience analysis

Interaction
CMs would be part of process of in-depth analysis of experience to feed into the reports on profitability for management,
to feed into reporting on state of company for regulatory solvency purposes

to feed back into product design and pricing so that appropriate contract terms can be offered to policyholders for forthcoming new business
to feed into the preparation of profit assessments for tax purposes
to feed into the process of reviewing terms for existing policies if this is permissible

3(ii) (a) Potential long-term claim with high potential claims outgo

Stress not uncommon in teaching profession

Claim is genuine — continue to pay

Possible non-disclosure
Could support continued counselling to address stress-related condition

Could offer one-off cash payment to fund career change
Could offer lump sum to fund career change coupled with reduced income to compensate for reduced earnings.

(b) Appears fraudulent
Establish with certainty that policyholder is the same person as the one mentioned in press.

Cease payments with immediate effect

Take steps to recover income payments made

(c) Validate that hip and knee claims are linked

Doesn't seem unreasonable

But may be unrelated "accident" injury

Establish that injured knee prevents any form of work

If not then cease claim

Otherwise continue with claim
Ensure that appropriate programme of recuperative care being undertaken

(d) Under free cover limit so no obligation to disclose medical condition

Very likely to be an actively at work clause in group contract
If so then need to establish if claimant was at work at the time of the policy being effected

If not then cease claim

If no actively at work clause then may need to pay
Need to establish if claimant being paid by previous insurer (if one exists)

Otherwise appears valid claim

May offer a lump sum payment to allow change of lifestyle.
Options would depend on life expectancy

END OF EXAMINERS' REPORT