EXAMINATION

April 2006

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.

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Chairman of the Board of Examiners

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Comments

Actuaries specialising in Health & Care require many attributes similar to actuaries practising in other practice areas. Candidates were examined in two of the more specialised requirements in April 2006, namely:

(a) in question one, the ability to work through a mass of detail and understand the basic insurance coverage given by the five main elements of health insurance — PMI, Hospital Cash Plans, CI, IP and LTC, and

(b) in question two, the ability to examine a new potential product idea at the strategic and technical level

In both questions, candidates who approached the problem, 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, there was a lack of sufficient detail in the answers with candidates failing to realise that 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, would attract 0.25 marks.

The Specialist Applications subject can examine candidates on their knowledge of aspects of UK Health Insurance practice. Each question had a section relating to the UK market, question 1(vi) and 2 (i). Candidates generally exhibited little or no knowledge of the UK market.

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) **Advantages**

Reduced overall cost (this depends on the relative cost of the benefits — generally the cover seems to be improving but LTC can be a wild card)
Reduced administration costs.
All employees of combined company have same benefits; this can help corporate identity.
Package may be viewed as more attractive, so easier to attract new staff
Benefits are limited to members and dependants and no longer cover parents.
If PP has good claims experience, may attract good overall scheme rate.
More corporate bargaining power.
Increase credibility in larger scheme; future costs easier to predict.
Disability treated quicker under PMI so employees are likely to return to work more quickly.

Disadvantages

Overall cost of scheme may be increased.
Professional costs of the merger and communication exercise.
Problem of dealing with employees who feel that benefits have been reduced.
No longer any cover for parents.
May have to deal with LTC claims in payment. What happens if claimant recovers and is then sick again?
Claims history for PP may make insurance expensive.
Late reported CI claims.
Problem of two identical claim events, one before and one after the change date, being treated very differently (e.g. diagnosis of cancer).
Inconsistency of new salary definition of FS staff with FS pension plan and possible overlap of benefits with provision of ill-health benefits.
Likely increase in PMI claims when replacing cash plan.
Redundancies in merged scheme increase potential for PMI claims.

(ii) **Advantages**

PMI arrangement is indemnity (has no excess) so the individual will not have to contribute own funds.
PMI more comprehensive.
PMI covers dependants.
IP provides cover for wider range of disabilities — e.g. back problems, mental problems.
IP benefit is payable throughout the duration of disability so better matches the loss of income.

Disadvantages

CI benefit may be greater for the same disability event in FS scheme.
CI provides a lump sum which may be used for capital costs (e.g. alterations to a house).
With CI an individual can choose how to use money.

Hospital cash plan may give individual cash while PMI provides no cover (e.g. dental and optical cover).
May be required to provide medical evidence for the new benefits.
Other insurance may have been bought to fit in with scheme benefits.

(iii) (a) Generic premium basis for both IP and PMI will include:

Risk premium calculation including

Burning cost / Experience rate element
Book cost / age rate element
Adjustment from risk premium to office premium

Burning cost / experience rate calculation will need to take account of:

- Inflation in expenses
- Inflation in PMI average claim size
- Legislation
- Recruitment/dismissal
- Growing inclinations to claim
- Changes in benefits

You will need to analyse trends.
You will need something on employer's "discretionary" insistence.
This will be applied to the prospective exposure.
What activities/occupations will continue into the future?

Book cost / age rate calculation will need to take account of:

- Specific profile of scheme membership
- Applied to a set of tables

Burning rate and book rate combined using credibility approach
Dependent on scheme size

From future risk premium to unit office premium

Then for the quote, you will want information about expenses, including:

- Commission
- Margins
- Cost of capital
- Profit
- Cost of reinsurance
- IPT (PMI)

Also need to consider competitors' rates.

(b) **In providing the specific quotation consideration would be taken of:**

Book rated scheme membership profile requirements
Scheme members may differ in key risk characteristics
Health and Safety arrangements
Free cover for IP
Term of contract
Impact of unemployment/redundancies
Sex
Age
Does employer have no-smoking policy?
Occupation mix
Ratio and composition of dependants
Location
Salary (for IP benefit levels)
Brand new arrangement — historical data may not be particularly relevant.
Long-term sickness absence records (IP has 26 week deferred period).

Specific Experience related requirements include:

Exposure past and coming year broken into homogeneous subgroups.
Benefit details past and coming year.
Past claims by product by homogeneous subgroup.
This will help you calculate the historic burning cost.
Large or unusual claims (if likely to recur).

Final adjustments

The new scheme
Are there different levels of initial health screening operating currently between the various schemes?
Will the future selection procedure for employees be different?
Differences in claims control procedures.
Do we need ancillary services to run a new line: rehabilitation counsellors, on-line claims assessors etc?

Other considerations

Not all insurers might be authorised to write each of the policy types on offer.
We are in competition to write this business. Do we pare margins?

(iv) 1. **Restrict benefit**

IP
Extend deferred period
Strengthen definition of disability
Remove any escalation of benefit
Reduce expiry age
Reduce percentage of salary
Increase exclusions e.g. working abroad

PMI
Restrict choice of hospitals
Reduce upper limits
Introduce excesses
Fixed benefits, not indemnity
Pre-authorise claims
NHS-waiting times before private access
Eliminate aspects of cover: e.g. recuperation, out-patients, alternative treatments
Increase exclusions e.g. exclude treatment abroad

2. **Stricter underwriting at entry / on transfer**

Pre-existing exclusions
Full underwriting
Lower free cover limit (for IP)
All scheme members must re-apply
Scheme becomes compulsory not voluntary

3. **Restructure scheme**

Alter benefit structure for different groups of employees e.g. management continue as is, but workers get reduced benefits as above.
Proportionate benefits
Linked claims
One scheme, but restructure eligibility.
Reduce policy term/guarantees
Change definition of salary
Introduce profit sharing
Deduct other income
Reduce benefit after a period

4. **Abolish dependants' benefits**

5. **Introduce member contribution if none before**

(v) The transfer is voluntary, so some underwriting will be required by the new insurer to prevent anti-selection.

Employee agreement will be required to join the Scheme.

PMI

As the group is large enough then Medical History Disregarded may apply.
A declaration of being "Actively at work" may be required.
Or pre-existing exclusions may apply subject to a moratorium basis.

Group IP

As the group is large enough then free cover will apply.
A declaration of being "Actively at work" will be required.
Benefits for Directors and Senior Staff may be above free cover.
If so, will be underwritten as per Individual IP.

(vi) Self-insured means that the company takes the risk
and does not use an insurer for the total risk.

PMI needs to use a "Medical Trust"
as self-insurance creates a tax charge on benefits paid to the recipient.

An alternative is to use a captive
or cost-plus arrangements.

IP can be self-insured by the company although the company will be unable to create a claims reserve acceptable for tax purposes.
so the claimant is in a weaker position on company wind-up than for an insured scheme.
Also loses ability to offset insurance premium against gross profits (treating them as a trading expense) even if there are no claims.
An alternative is to use a captive.
Need policy wording.
Deals with local hospitals.

(vii) The insurance risks are:

Parameter Error
- Actual morbidity is greater than expected.

Process Error
- Random variation around expected incidence.

Specification Error
- Error in the choice of model structure, in this case morbidity level.

Other risks include:

Expense risk
- Costs too much to administer.

Administrative risk
- Specialised system needed.

Data risks
- data quality is poor

Parameter and specification errors can be dealt with by stop loss insurance.
Process error can be dealt with by surplus reinsurance.
Expense, administrative and data risks can be dealt with by the use of a specialist Third Party Administrator, perhaps with a fixed cost contract.

Investment risks
- if it holds reserves
- manage with close matching

Credit risks
- if it uses third parties
- mitigate by using credit rating, vetting, break clauses in contracts, credit insurance

Enterprise risks
- in any case

Currency risks
- on liabilities abroad
- manage by close matching of assets

Insurance/reinsurance of some of the larger benefits.
(e.g. surplus reinsurance (capping the retained benefit) or some form of extended wait (e.g. purchase insurance with a long deferred period)
May look for excess loss cover for PMI
Possibly purchase some form of catastrophe cover
Use of other out-sourcing arrangements.
Medical expense inflation greater than expected
e.g. buying power effectively reduced.
Inappropriate claims — more difficult to decline
outsource claims control; need documentation.
Improve working environment.
Build in margins.
Apply entry criteria to reduce anti-selection.

2 (i) Key issues are profitabilility, volumes, market profile, office strategy.

Size of potential market

- No. of distributors
- No. of schools
- Whether compulsory
- Likely parental take — up

Are there existing providers in this area?
If so, is it profitable?
Is this additional business or competition with others for the same pot?

Systems development required

Consistent/compatible with current distribution

- Need to train sales teams/distributors
- Need to consider commission requirements

Is it badged?
Is there a reputational risk?
Is reinsurance available

Legal issues

- Writing IP on life of child
- Who holds policy?
- Who pays premiums?

Forms of underwriting/screening anticipated — likely to be limited. Can this be managed (pre-existing condition exclusion)?

Pressure to pay out from schools.

How does this product fit with overall business plan, company culture and strategy.

How would you price this business — any similar experience?

Childrens benefits — particularly difficult

Company expertise and experience — is this relevant?

(ii) The target here is to reach suitable risk premiums and then load for expenses and margins.

Thus need data that is relevant, reliable, credible and useable.

Investigate if such a product exists in the local or similar market place.

If yes, investigate the following data items:

- Policy conditions
- Underwriting practices
- Claims acceptance procedures
- Volumes of premium by year and by scheme
- Volumes of claims by year of inception, by age of claimant
- No. of schools
- Commission paid
- No. of lives insured, split between parents and children
- Media commentary on product
- Expenses incurred
- Persistency of particular schemes
- Profit emerging
- Reinsurers/consultants may help with detail
- Else make approximations on published data: Report and Accounts, FSA Returns etc.

If no, initiate customer research.

Investigate own portfolio for nearest equivalent.

- Analyse keep components for premium calculation as above.

Establish base product risk features.

- Policy conditions
- Benefit levels
- Approaches to underwriting
- Claims acceptance processes

Adjust information as above to make it relevant.

- Differing conditions, procedures of external providers etc.
- Changes in approach from own historical data
- Trends in claim inception or claim termination levels
- Changes in legislation or other external market/economic factors

Calculate exposed to risk suitably subdivided.

- Subdivision will depend on volume of data.
- Subdivision will depend on market approach to rate differentiation.
- For example, different rates for girls and boys schools, different rates for schools by region.

Estimate the equivalent claims incepting.

Calculate claim inception rates, noting trends by year.

Smooth these calculated rates by reference to a published table.

Use data gathered to estimate claim termination rates.

- May well need data from reinsurers/consultants or published data.
- Particularly for childrens experience

Estimate suitable claim payment annuities for each inception rate.

- Need to use a suitable interest rate that insurer is capable of earning on its assets, say over a five-year period.

Establish risk premiums, noting trends. Project to mid-point for which premiums will be payable and at which claims may occur.

Investigate levels of expenses.

- Expenses of sale, underwriting, new business processing
- Annual administration costs, regulation costs
- Claims acceptance, payment and monitoring
- Expenses incurred in developing product
- Other overheads such as management time

Forecast volumes may be needed for premium loading purposes

Investigate levels of commission payable.

Investigate capital required and its cost to the insurer.

Investigate any further investment earning potential
e.g. between premium payment and point at which claims begin

Investigate potential for intermediary to "sit on premiums"

Incorporate margins in final premiums.

- To reflect approximations/unknowns in earlier calculations
- To reflect insurer's attitude to risk
- To reflect any short term guarantees given

Establish insurer's profit requirement or return on capital.

Model business forward to assess whether criteria are met.

- iterative process
- may use stochastic processes
- may use deterministic model, allowing for certain extreme scenarios

Recalculate with final adjustments.

- To reflect competitive position in market (if product exists)
- Size of premium against school fee payable
- Any reductions must be consistent with margins built in

Other practical considerations — areas for investigation.

- Will we know the number of parents, the ages of parents, the sex if single?
- Need to investigate current and potential childhood diseases.
- Need to know anticipated future levels of fees by school insured.
- Degree of "compulsion". Who pays? Is it voluntary? Can parents opt out?
- Will we get any occupational information?

(iii) New business

Key factors are:

- Life covered (parent, child, 2 parents)
- Sex
- Age of child/parent
- Level of fees
- School of child
- Intermediary (it may only be one!)
- Level of underwriting

Morbidity

- Inceptions
- Recoveries

Lapses

- May be able to analyse lapses and claims experience in similar way to new business (although claims may not be that credible)

Expenses

Investment returns

Profit

Mortality is not an issue with this product.

Could analyse homogeneous subgroups.

Depending on volume of data/credibility (not distribution channel as presumably sold through one intermediary).

(iv) **Advantages to insurer**

- CI event depends on incidence only — thus lower expenses in claim payment.
- Better data available for pricing
- Less susceptible to pressure to pay if claims condition more objective.
- Less underwriting

Disadvantages to insurer

- Problems with benefits
  - Should the product provide balance of fees on leaving school?
  - Does school take inflation risk?
  - What waiting period should be used?

Advantage to parent

- Lump sum more attractive
- Can move school if necessary (if benefit paid to parent)
- Allows flexibility in use of money
- Insurer cannot cut off benefit
- More insurers offer CI than IP so likely to be more competitive market
- No deferred period

Disadvantage to parent

- Does not provide the protection required e.g. if illness not covered by CI policy.
- Does not cover further episodes, once benefit proceeds are spent.

Advantage to school

- Fees are paid by insurer for balance of school career (presumably) — cash in hand.

Disadvantage to school

- Money may not get to the school if one lump sum covering many years.

Advantage to distributor

- Lump sum can make CI an easier sale

Disadvantage to distributor

- On the other hand, does not best fit the need which is income over period of schooling, so maybe more difficult to sell.

Other interested parties (e.g. reinsurers, regulator) may be happier with CI.

END OF EXAMINERS' REPORT