EXAMINERS' REPORT

April 2010 Examinations

Subject SA1 — Health and Care Specialist Applications

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. 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. 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.

Comments on individual questions

Question 1

(i) *Candidates did not always appreciate that it was additional risks that were being sought. These would not include issues such as tax rates etc since it is assumed that the company would have investigated these and hence would not be a risk. Candidates should bear in mind that an increase in the value of an outgo does not necessarily translate to an additional risk, if the increase is quantifiable*

(ii) *This was generally well answered although several answers lacked breadth listing only sources of morbidity data but not discussing other aspects of the pricing basis such as data on inflation levels and expenses.*

(iii) *Whilst candidates generally made several relevant points on the effects of the launch on solvency fewer made good points on the effects on liquidity.*

Question 2

(i) *Candidates needed to focus on the accelerated critical illness benefit option to score highly – a discussion of flex schemes in general was not appropriate here, as it did not address the question.*

(ii) *Several candidates seemed to lack awareness of the standard methods of underwriting group business (even though this is covered in the core reading).*

(ii) *Most candidates failed to describe in sufficient detail how the cover multipliers might be set.*

Question 3

(i) *Candidates needed to think widely here – a list of reasons the policyholder might cancel is too narrow.*

(ii) *This part was well answered*

(iii) *This part was well answered*

(iv) *Candidates needed to think carefully about exactly what question was being asked – talking about initial expenses and business mix would not be relevant here.*

(v) *Most candidates described the regulatory capital requirements under Pillar 1. Fewer described those required under Pillar 2.*

(vi) *This part was generally well answered*

Question 4

The question discussed the factors to be considered by the actuary on a health product where the marketing manager had suggested that the product was more expensive than those of competitors and that a budget version should be introduced which would be cheaper. In practice the first task would be to verify the facts and check the original assumptions made on the product. Some candidates ignored this and restricted their answers to a re-launch of the product and hence ignored several of the marks available on this part. Many candidates did not provide sufficient points to score highly on this question; in general few candidates achieved half the marks available.

Candidates who had practised techniques for generating a large number of points for long question may have found this question easier to answer. It is often helpful to use subheadings when answering this type of question.

1 (i) Additional risks include:

Regulation – if little is known about the regulation in the overseas country, the UK company runs additional risks.

Exchange rate risk – premiums may be received in the domestic currency or the overseas currency, and if the product provides indemnity, claims will be paid in the overseas currency. The expenses will mainly be in the domestic currency.

Investment risk – the company will either have to invest in a market they are less familiar with to match the liabilities and the liquidity risk may be higher or suffer currency mismatching risk.

Data risk – as there is no own experience data available, the insurer will have to use external data, which may or may not be relevant.

Assumption risk – the product will be priced on a set of assumptions, but there will be extra uncertainty about these as the company is not familiar with overseas experience.

Expenses risk – it may be harder to correctly predict the additional costs involved in operating in a foreign country.

Claims incidence risk – this may be significantly higher in the overseas country, e.g. due to a higher prevalence of infectious disease, possible poorer sanitation.

Claims cost risk –claims inflation risks may be materially different (e.g. more volatile) than in the UK. Claims cost risk may also be greater due to potentially having less close ties and relationships with providers.

Accumulation of risk – the ex-patriate community may be close-knit and hence have greater exposure to an epidemic than other groups of individuals with a similar geographic spread.

New business risk – it may be difficult to predict the likely level of take up for this policy. As it is a new product, there is a risk that insufficient volumes are sold to recoup development costs.

Lapse risk – it is possible that there may be a sudden step change in rates of withdrawal, for example if exchange rates movements prompt large numbers of ex-patriates to move back home (or just cut costs).

Competition risk – competitors may be so impressed with the idea that they follow suit, impacting new business levels or forcing the company to price at unprofitable levels to win any business.

Operational risk – e.g. may have a remote claims management team.

Fraudulent claim risk – might be higher as it may be more difficult to "police" what happens overseas.

Taxation risk – although the company would naturally investigate the tax position before launch, there could be changes in taxation laws which adversely affect this cross-border product.

Reputational risk – e.g. if the quality of care is lower overseas.

Political risk – e.g. increased hostility to overseas companies, future problems with repatriating profits.

(ii) Data from consultants who have done work in the overseas country
Data may be available from the local regulator
Overseas medical journals
Other UK companies who have written a similar expatriate product for this country or worldwide.
Reinsurers may be multi-national and hence have overseas data.
There may be costs involved in order to gain access to relevant data. For example, may need to purchase reinsurance in order to gain access to the reinsurer data.
There may be national statistics data for the territory.
Data may need adjusting to allow for differences e.g. underwriting practices, target market being a special subgroup of normal UK population).
Some of the company's own local data may be relevant – for example, UK rates of morbidity may be more relevant than the overseas rates as the product is aimed at expatriates.
There may be data available from direct writers in the territory, especially if any kind of reciprocal arrangement is entered into, or the company could use local businesses to assist with distribution.
The insurer may be able to obtain medical expense data directly from hospitals in the overseas territory.
Historic inflation levels for the overseas territory should be easily obtainable on the web. However, historic inflation levels may not be appropriate (or need adjusting) for projecting future medical claims inflation. Similarly, historic investment rates can be obtained, and these can help with estimating investment returns in the future and inflation.
Competitor pricing data (including commission rates) may be obtained by getting quotes or there may be quote portals similar to those in use in the UK.
The insurer may already write other business in the overseas territory, or it may be part of an international group that may have some form of overseas data.
The company's own local expense data may be useful for some of the expense assumptions. Similarly the company may be able to start with its own expense data, performing a bottom up estimate of other expenses that will be different for the expatriate product.

(iii) **Solvency**
In the long term, writing profitable business should improve the solvency position. However, in the short term, there would be high start up costs (e.g. travel, setting up infrastructure) which would cause a day 1 strain – these would adversely affect solvency. There may be local (overseas) requirements for the amounts of reserves to be held – these may be more onerous than UK rules which would also adversely affect solvency.
Higher reserving margins would be needed due to the general uncertainty arising from the newness of the product. Given the additional risks identified in (i) the company would need higher Pillar 2 type risk capital.
The effect on solvency will also depend on the means of writing the business – if high levels of initial commission are paid, the impact on solvency will be more onerous.
If there is a significantly adverse impact on solvency capital, particularly from start up costs, then the company might have to raise additional finance to

counter this. Financing reinsurance may be taken out to reduce the impact on solvency. Alternative capital management tools may be available (e.g. securitisation).

Liquidity

The level of liquidity is basically the amount of readily realisable assets the company holds compared with its imminent outgoings so the impact on liquidity will depend on how the money to fund the start up is raised. If rather illiquid assets are sold to fund the start up then the impact on liquidity could be minimal. The company may need to sell the assets at a time of poor prices. It may be more difficult to liquidate assets invested in the overseas country relative to those invested in the UK.

If the current cash holdings are used to fund the start up then the impact on liquidity could be severe.

The ongoing liquidity impact will depend on the asset matching strategy for the book of business. If the premiums received are invested in liquid assets then the move could improve overall liquidity.

2 (i) **Advantages include:**

Good marketing – this might allow the company to sell more of these schemes and therefore make higher profits and may also differentiate the company from competitors.

As there is no existing CI option available, then it may be attractive to employees e.g. because it meets their needs or allays their fears, for tax reasons.

Using weight as a rating factor might be seen to be pricing fairly and also a positive encouragement to maintain weight over time at a sensible level.

It may be more tax efficient for the employee than purchasing this cover individually, thus attractive to clients.

The proposed pricing structure is simple.

The underwriting structure will reduce anti-selection from those with poor height/weight ratios.

It would provide diversification for the insurer into group CI.

Disadvantages include:

Introducing a new option gives an extra administrative burden for employers.

The option may be difficult to explain.

The height/weight ratio is a blunt tool and not always a good measure (e.g. very active, muscular people may be unfairly penalised).

The height/weight ratio is likely to change over the year. This will have to be reviewed every year, increasing the administrative burden.

Costs of developing and pricing this new option and changing systems may be high and there may not be sufficient take-up of the option to make it financially viable.

Pricing (or setting multipliers) may be difficult if limited data available on height / weight ratio impact on claims. Also pricing might indicate different ratings for the life and critical illness elements.

Penalising people who are overweight or underweight might be seen as contentious.
The insurer would remain exposed to other sources of anti-selection (e.g. family medical history).
There may be some doubling up of cover as the flex scheme is already likely to include a benefit on death or IP.

(ii) Most group flex schemes are large so automatic entry is given with minimal restrictions at outset. Each scheme would require generic initial underwriting such as a statement of health or requiring them to be "actively at work"
There may be a free cover limit above which more initial underwriting is carried out.
The insurer also needs to obtain an indication of height and weight at the outset in order to allocate the member to the correct underwriting category.
The insurer will also need to obtain this information at each policy anniversary for each member. It is difficult to check false statement of height or weight at inception or policy anniversary.
It would be necessary to take into account the reinsurer's view.

(iii) Need to obtain details of the impact of the proposed over and under weight rating classifications on mortality experience and the same in respect of critical illness inception rates. Internal sources may be of limited use.
Reinsurer or consulting actuaries may be able to provide data.
It may be necessary to combine other underwriting factors into limited ranges in order to simplify rating as much as possible.
Would need to obtain incidence rates and a corresponding exposure to risk.
The rates would then be calculated and ratios of initial rates to rates by category calculated.
Need to allow for different ratios for different illnesses and death.
Rate by sex and by age group.

3 (i) Expiry at the end of the defined term
Death
Retirement
The policyholder stops living in the UK
The policyholder stops working in the UK
The policyholder stopped making the premium payment
The policyholder has repaid or no longer has a mortgage
Discovery of fraud or non-disclosure
Misselling
Cancellation because the ceiling reached

(ii) Pre-existing conditions
Temporary or seasonal unemployment
Expiry of non-renewable or fixed term contract of employment
Voluntary unemployment
Early retirement.
Dismissal due to misconduct or breach of contract
Stress or nervous disorder, unless certified by a consultant

AIDS or HIV, unless certified by a consultant
Backache, unless certified by a consultant
Self inflicted injuries / attempted suicide
Drug or alcohol abuse
Treatment that is not medically necessary, including cosmetic surgery.
Pregnancy, unless a medical complication occurs
Injuries arising from war, terrorism, acts of violence, civil unrest
Injuries arising from hazardous sports or pastimes
Flying but not as a fare paying passenger
Failure to seek medical advice
Criminal acts

(iii) Need to have a mortgage
The property on which the mortgage is held is the policyholder's private residence
The policyholder is permanently resident in the UK
The policyholder meets the minimum age requirement at the start date
The policyholder will not pass the statutory retirement age before the termination date of cover
The policyholder is actively working on the start date
For no less than a minimum number of hours as defined in the policy documents
The policyholder must have been continuously employed for at least, say 6 months immediately prior to the start date
The place of work is within the UK
There is no known impending unemployment
The policyholder is not in casual, temporary or seasonal employment
Mortgage to have been taken out within last X months (depending on level of underwriting)

(iv) Morbidity assumptions: accident, sickness and disability and involuntary unemployment rates. Both incidence and recovery assumptions for all claim rates would be needed.
Mortality assumptions (both before and during claim).
Assumptions for IBNR calculations.
Interest rate, not exceeding the amount allowed under the valuation rules and reflecting yields on underlying assets and adjusted for tax and default risk.
Renewal expenses assumptions, based on internal expense analysis from the last year.
Renewal commission would need to be allowed for, although this is a known amount rather than an assumption.
Assumptions on claim expenses would be needed.
Inflation assumption is required to project expenses into the future and a salary inflation assumption is also required in order to project policyholder monthly incomes to determine claim amounts.
Tax rate, taking into account a projection of the company's taxation basis.
Withdrawals can now be allowed for, as long as the allowance is prudent.
All assumptions should be prudent and based on similar recent experience if available adjusted for any known differences or future changes and should not

be varied materially from year to year without good reason. For withdrawals and mortality, care is required to assess the direction of prudence.

(v) The capital requirements under Pillar 1 will be assessed as a MCR (minimum capital requirement). This is calculated on a prescribed basis set down by the FSA. Assuming this is a long term insurance company, it is the sum of the LTICR and the RCR subject to a minimum of the BCRR.
The Pillar 2 capital requirements are the ICA (Individual Capital Assessment). This is a non-prescribed risk based measure that firms must assess themselves taking into account all risks to which they are exposed and based on a 99.5% survival probability over one year.

(vi) The value of premium income on this product
A measure of new business such as annualised premium income from new business only
A calculation of the value of the new business written
A calculation of the value of existing business (ie the embedded value) and the change in that value of existing business, compared with what you would expect due to claims, offs and unwinding of the discount rate etc.
The product's contribution to profit (or earnings) over the reporting period and a full analysis of surplus arising including new business strain
Perhaps carried out on an internal basis, or a statutory basis
Experience investigations, i.e. comparing the actual experience with expected for the following split by relevant factors
- Morbidity
- Expense
- Persistency
- Involuntary unemployment

A comparison of new business performance against the plan and a revised plan going forwards
Information on market share, competitive position
New business splits by distributor/sales channel
A review of the performance of the investments backing the reserves and perhaps the degree of matching
Underwriting information (e.g. applications denied, claims rejected)
Financial impact of any complaints (e.g. numbers, potential cost)
Some measure of return on capital
Financial details of any reinsurance held

4 (i) The marketing manager is correct that reducing the number of illnesses covered should reduce the price. The impact of a cheaper product may result in a higher volume of business being sold and hence higher overall profits being made but could be offset by the negative impact of the reduced coverage, market perception, PRE etc.

The company should:

Investigate whether it can actually offer the product as he suggests

In order to be sold as CI the ABI Statement of Best Practice requires insurance which pays out on meeting the policy definition of a specified critical illness and where cancer, heart attack and stroke are included.

Are there any other regulatory considerations.

There may need to be very significant reductions in conditions covered to have any impact on the cost and any price reduction may not be sufficient to make the new product competitive for the limited illnesses covered.

The new product may be more expensive than for the original due to increase in expenses (e.g. increased claim underwriting and rejecting non-covered events).

Investigate whether he is correct that the company's product is more expensive

Investigate the plans offered by the competitors and compare with the proposal. In particular their price structure, list of conditions covered or any unique selling points

If product is more expensive investigate why and, if so, whether the problem can be fixed (e.g. because of inefficient expenses) or by using reviewable premiums

Other factors to be considered are:

Marketability

Are there marketing reasons to continue selling the existing product, e.g. does it complement a market leading product in the company's range.

Undertake market research on what conditions customers want in/out of the coverage list. If possible the conditions chosen to be excluded should be those for which there is less of a perceived need for cover.

Will there be changes to the amount of initial underwriting carried out for the budget product. If so this may effect the marketability of the new product and will also effect the claim experience and profitability of the new product.

Investigate any existing competitor budget products to see if the company can match or improve on them. How will the competitors react to the new product e.g. by reducing prices for their more comprehensive product, develop new products etc.

Consider whether the company actually wants to be cheaper than other companies – is this in line with its overall marketing message or brand?

Will the launch be 'soft' or 'hard'? Are there any timing issues?

Profitability

Need to determine whether the proposed new budget product can be designed and priced to meet the company's per policy profit criterion. Can enough of the new product be sold to cover fixed/development costs?

Will the company continue to sell enough of the existing product after the new product is introduced to make the required contributions to expenses, profit etc.

Need to project total expected future profits, including expected sales volumes, assuming both "with" and "without" the new product, and compare the results. Assess the sensitivity of the profit to changes in the assumptions.

Does the new product fit with the insurer's attitude to risk?

PRE/Treating customers fairly

If the company continues to market both versions, will the customers clearly understand which version of the plan they have been sold. There could be reputational/misselling issues arising e.g. if the company declines a CI that is covered under the other plan or which might "normally" be expected to be covered. The policy conditions, in particular, the list of covered illnesses, will have to be very clearly set out in the policy literature and the sales process. This means that if there is confusion the regulator may require claims to be paid which the company did not allow for in its pricing/reserving.

Distribution

If the product is very different from others in the market, then it may not sell in sufficient volumes due to being seen as a more difficult sale.

The sales staff would be required to explain the differences between this product and others in the market and the company's existing product if still sold. Will the sales staff earn sufficient commission for the additional work required to explain the product differences.

Independent sales channels will also need to be made aware of the new product and its features.

This is a large company so any reputation issues caused by the new product may impact sales of their other products.

Is the "budget" contract appropriate for the company's intended target market and distribution channels or will new distribution channels need to be developed.

Consider the current market share and potential market share, expanding target market and likely changes in mix of business e.g. age, SEC, and the impact on claims depending on cross-subsidies in the rating structure.

Administration

Consider any difficulties there may be in making the required changes to the administrative processes, including:

- the underwriting process
- the claims process
- the company's systems
- providing the new management information
- gathering data for future repricing, experience investigations etc.

The company will need to train all internal staff on the changes.

Running two claims and (possibly) underwriting processes in parallel adds to the costs. It is more likely that claims which should not be paid may slip through e.g. due to staff confusion or regulator decision.

Experience / assumptions
Unlikely that the company has sufficient volumes of its own morbidity data to use, particularly once it is broken down into individual CI experience.
Will the company be able to obtain sufficiently detailed data to price the new product from other sources e.g. from a reinsurer, consultants. Obtaining data may have a cost e.g. the reinsurer will expect a significant proportion to be reinsured in return for their assistance.
Data will need to be adjusted to reflect the expected underwriting level and other characteristics of the new product and to allow for correlations between illnesses.
Will need to estimate the time and costs of making the required changes to the systems and processes and of other initial developments, e.g. rewriting the policy literature, pricing the product.
Changes may be needed to the pricing and reserving assumptions underlying the existing product to reflect the expected impact of introducing the new one e.g. need to estimate the volume of new and original business which the company expects to sell in order to estimate per policy expenses.
Consider whether there will be an increase in lapses of the existing product and re-entry to the new one?
Need to estimate the lapse and withdrawal rates for both new and original business.
The company will need to incorporate margins in final premiums to reflect approximations/unknowns in calculations and assumptions.

Reinsurance
Will the company be able to negotiate favourable reinsurance for the new contract? Will the reinsurance rates for the company's existing product be affected e.g. because the volumes are lower?

Capital / reserves
Consider whether reserves will have to be increased to allow for the risk of CIs which were not anticipated in the pricing slipping through and/or the legal costs of defending more declined claims. Also consider the need for additional capital to support the launch and its cost to the insurer, particularly if there is new business strain and higher than expected volumes are sold.
Investigate if there are alternative/better uses of capital.

(ii) The suggestion would certainly reduce initial underwriting costs. It would also improve the attractiveness of the product due to the reduced "hassle factor" for policyholders Distributors may like it. The company may sell more.

However the complete removal of underwriting would mean that the company is not protected from anti-selection by substandard lives. It would not be able to rate each life fairly according to the risk it poses, couldn't offer suitable terms to substandard lives and couldn't identify and decline any seriously

impaired lives where it is impossible to assess risk accurately. As a result, the claim experience is likely to worsen significantly overall. Claim experience which is not as assumed in pricing basis may lead to losses or the need to increase margins

If premiums increase correspondingly, then better risks could go elsewhere which exacerbates the problem. Increased claims risk would mean a need for higher reserves. However, the level of anti-selection risk will depend on whether competitors have a similar underwriting approach.

Thorough underwriting will have to be carried out at the claim stage, e.g. by comparison with general policy exclusion, leading to an increase in claim stage costs. Reputational risk would also be increased as more claims are likely to be rejected at the claim stage. There is likely to be increased risk that the regulator may insist that claims are paid which were not intended in the pricing basis.

The cost of reinsurance is also likely to increase significantly

A compromise to the suggestion may be to introduce a reduced degree of initial underwriting e.g.. an increase to the limits at which medical examinations are required or a moratorium or pre-existing medical condition exclusion clauses. This may be acceptable for the budget product as there are fewer illnesses covered and the effect of non-disclosure may have less impact on claim costs. If reduced underwriting only applies to the budget policies there will be a need for two distinct processes and systems, cost and complexity

END OF EXAMINERS' REPORT