

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2012 examinations

Subject SA1 – Health & Care Specialist applications

Purpose of Examiners' Reports

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and who are using past papers as a revision aid, and also those who have previously failed the subject. The Examiners are charged by Council with examining the published syllabus. Although Examiners have access to the Core Reading, which is designed to interpret the syllabus, the Examiners are not required to examine the content of Core Reading. Notwithstanding that, the questions set, and the following comments, will generally be based on Core Reading.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report. Other valid approaches are always given appropriate credit; where there is a commonly used alternative approach, this is also noted in the report. For essay-style questions, and particularly the open-ended questions in the later subjects, this report contains all the points for which the Examiners awarded marks. This is much more than a model solution – it would be impossible to write down all the points in the report in the time allowed for the question.

T J Birse
Chairman of the Board of Examiners

July 2012

General comments on Subject SA1

Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner are far more likely to pass the subject. Candidates will gain few marks if they do not address the question asked but merely write around the topic of the question. 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. It is often helpful to use subheadings when answering long part questions.

Comments on the April 2012 paper

The general performance was similar to that in September 2011. Well-prepared candidates scored well across most of the whole paper. As in previous diets, questions that required an element of analysis or application of knowledge were less well answered than those that just involved repeating bookwork. The comments that follow the questions concentrate on areas where candidates could have improved their performance. Candidates approaching the subject for the first time are advised to concentrate their revision in these areas.

- 1** (i) Firstly research the overseas market
- Micro-insurance (MI) is currently well developed in some countries e.g. India and some parts of Africa. The target market is low wealth segments of a population. MI is based on a pooling or community approach and provides a social benefit in providing access to insurance cover for such socioeconomic groups. It must be culturally/religiously suitable for the overseas market (e.g. women not being permitted to purchase insurance).

The insurer has experience of IP and a product on which to base its micro version but any policy design must meet the needs of the intended policyholders and the insurer would need to decide on the specific product design.

Demand

Consider potential demand. Investigate the State provision of IP in the overseas country. Even if State does not currently provide IP it may do in the future as the country develops. Also consider the availability of any free provision or any charitable assistance.

Research any existing insurance available and whether locals are aware of a need for insurance – it may be difficult and costly to persuade them of the need.

Investigate whether the State recognises a need for MI and whether it would help create awareness or whether locals are instead used to community groups (extended families) providing unofficial insurance.

Consider the effects of taxation on premiums and benefits.

Even within a single country demand and needs will vary between urban and rural population, as may possible distribution methods. The insurer should attempt to estimate the potential current demand / market size / sales volumes, what potential there might be for its future growth and the average affordable premium size.

Needs to research the current level and sophistication of the competition, if any and whether it is provided by long established large domestic insurers with excellent brand trust or State sponsored providers. The insurer needs to investigate whether it can provide a better, or cheaper, product or a better claims handling service to distinguish itself from local providers.

Entering the market

The insurer needs to consider the procedure for entering the market, whether done as a subsidiary or a branch. If authorisation is required investigate whether it is likely to be granted to an overseas insurer. The insurer may need to partner an existing local insurer; if so, the quality of potential partners must be assessed.

The insurer would need to consider the amount of investment which will be needed in terms of initial capital requirements and start-up costs and how long

the start up will take to achieve and the amount of training required. Also need to consider the level of State encouragement and the availability of any tax breaks or any State subsidy. The potential for fraud from partners or policyholders should also be assessed.

Pricing

Need to consider the availability of data for pricing purposes. Own data will be unsuitable even with adjustment.

Data may be available from a State scheme but will need to be adjusted as insured claim experience tends to be heavier. Consultants or reinsurers may have some data. Data may be available from the statutory returns by local insurance companies (if they exist). If undertaking a joint venture, the local partner may have data. However, there may be concern about the quality of any data even if provided by a partner. The insurer needs to remember that the population structure is likely to differ from that in the domestic market e.g. more people of working age. Also, as a rapidly developing country any data available could quickly lose relevance.

Marketing and distribution

Consider how the product will be distributed, the available channels, the commission structure and record keeping requirements. Distributors may need to collect premiums in cash door to door.

Training would be required for the sales process and keeping control of sales process would be necessary in order to avoid mis-selling.

There is a potential for fraud by a distributor e.g. collecting premiums for a deluxe version but making an application for cheaper version and passing on the lower amount.

Need to comply with local regulation regarding distribution practices and with international best practice. Consider the potential for other sales channels e.g. through community groups, religious or tribal groups.

Sales literature will need to be produced and translated into the local language. Levels of literacy could be an issue: need to ensure that policyholders understand what they have bought.

Underwriting

Need to consider the requirements for the underwriting process. This is likely to be limited or none; even other options such as “actively at work” will be difficult to check up on. Hence it is likely that the product will be based on full cover of all lives. Consider underwriting approaches used by others in the market. A longer deferred period could be used but this is unlikely to meet need of the very poor.

Need to consider the definition of incapacity; will most likely be any occupation.

Need to consider the requirements for the claims management process. Likely to use local disability councillors who will need to be trained.

Regulation and legal considerations

Consider regulation and legal matters including any restrictions on overseas operations and whether there are any product design/pricing restrictions under local regulations. Obtain local advice on legal issues to ensure interpretation is as intended. Contracts with policyholders will be subject to local law and even implied customs so research local regulation. Consider relative onerousness of local reserving and solvency capital requirements. The insurer will need to complete local statutory returns.

The interaction of two sets of reporting/reserving requirements may lead to even higher overall solvency requirement. The need to comply with two regulatory regimes means that there is greater potential for fines due to accidental non compliance.

Administration

Need to set up systems to record in force data e.g. premiums and benefits. There could be more data to capture as premiums will likely be paid more frequently. Also need a claims database capable of holding significant amounts of data for a variety of experience investigations and need to set up a process to monitor data and revise assumptions regularly.

Profitability

Consider whether a sufficient level of profit can be made on the enterprise after allowing for development costs and taking into account the need to keep premiums low and affordable but also needing to include relatively high risk margins due to uncertainties regarding experience etc. Consider whether enough business can be sold to cover overheads. The risks will differ from those under the current product. Consider the sensitivity of profit.

Other considerations

Capital requirements will also depend on the relationship between the pricing and supervisory reserving bases, in particular with regard to the sickness assumptions, but may be higher than under the current product due to greater uncertainty. Need to consider whether the insurer has sufficient capital available to fund this development and whether there are alternative preferable uses for that capital.

If setting up an operation based in that country, consider the potential for recruitment. It will be helpful to have some local staff with knowledge of the market, culture and language but they may not have the sufficient level of expertise so consider how many of the existing staff might be prepared to relocate. Also need to consider the availability and cost of suitable premises.

Consider the availability of suitable assets. Investment overseas requires appropriate knowledge and skills; consider the availability of these skills.

Need to consider the tax regime including potential additional tax incurred on repatriation of profits. May be greater political risks if the government is less stable and/or subject to more frequent change, e.g. risk of change to the country's attitude to overseas insurers and may be greater risk of adverse tax or regulatory changes. There is a currency risk when converting profits into home currency.

Need to consider whether will be able to obtain reinsurance. Reinsurers may be able to provide technical or underwriting expertise. If (have to) use reinsurers operating in this market, they may have a greater risk of failure.

Consider whether the product fits with the company's corporate brand/strategy/culture.

- (ii) The main differences are likely to be the claim inception rates and the claim termination rates. The proposed product will likely have higher claim inception rates due to less stringent definitions of incapacity, less stringent underwriting, the more manual nature of the policyholder's normal occupation, a higher likelihood of civil unrest or wars and a higher incidence of pandemics due to differing climate and sanitation arrangements.

Differences in claim termination rates are less clear cut. Lower levels of medical facilities may lead to longer claims than expected for comparable incapacities as will the less stringent definitions of incapacity, the more manual nature of the policyholder's normal occupation, the potentially higher levels of initial serious disability (e.g. landmines, mining accidents etc) and the differing levels/effectiveness of the claims management system. Also some diseases e.g. AIDS, leprosy may not lead to recovery. However higher levels of mortality may terminate claims earlier than expected.

The speed of return to work may depend on state of the economy/level of employment; there may also be a different cultural attitude towards returning to work.

Claim rates may be higher due to higher levels of fraud. Large volumes of small policies make fraud more difficult to spot and the cost of procedures to identify fraud may outweigh savings. The local culture may make checking up difficult e.g. reluctance to talk to investigators. Also, in a culture where insurance is not commonplace, there may be less appreciation of the consequences of a fraudulent claim. Defrauding a large overseas insurer may be acceptable even to government.

Poorly translated policy documentation may lead to a higher level of disagreements. There may be potential for bad publicity due to refused claims. This could affect the home market as a claim is likely to be important to the micro client and denial may lead to severe hardship or death.

It may be difficult or costly to travel to doctor to confirm sickness. The quality/professionalism/training of doctors will also have an effect.

There is a greater potential for anti-selection and moral hazard. There may be more non-disclosure (e.g. relating to PECs) e.g. due to lack of understanding of the importance of full disclosure.

Withdrawal rates will probably be different. They may be higher due to pressures on income which may be very variable, e.g. weather dependant, drought etc or due to lower appreciation of the value of the policy or they may be lower due to higher recognised need. Withdrawal rates may also depend on level of competition.

Expenses are likely to be higher overall despite the likely cheaper local labour and lower rental costs. Initial expenses will be higher due to the need to recover the costs of developing a new product, setting up a new venture and training the less experienced staff recruited locally. Operational costs may be higher if some operation are set up overseas, e.g. due to less stable IT networks or more frequent natural catastrophes. It may be necessary to hire security guards to protect incoming and local staff in some regions. Claims expenses may be higher due to the product having longer claim payments.

Inflation and expectation of future inflation will be different as it will largely depend on the economy of that country.

Per policy expenses will be higher. Individual premiums will be small so relative costs of banking and accounting will be increased.

Premium payment frequency may be weekly not monthly or annually and payments may be in cash or in an alternative commodity, such as grain. There may be record keeping issues due to the large numbers of transactions. Collectors may not pass on premiums or they may be stolen in transit. Potential for disputes – policyholders may not keep receipts etc. Transport links will be poor hence audit difficult (within country or from head office).

May need to convert into different currency.

There may be greater investment costs if required to hold reserves in the local country and greater costs of buying suitable investment expertise and dealing in emerging markets. Potentially suitable matching assets are unlikely to be available (so more potential for investment losses). However there may be potential to make greater investment returns and more diversification from domestic investments, although if the government is less stable/secure then investment returns may be more volatile.

Volumes of business may be higher depending on the potential size of the target market relative to the domestic one. There will be less diversification of business by target market, as this is mainly the very poor and young, or by geographic location.

- (iii) The challenge in improving experience in this micro-insurance product via claims management and underwriting is to keep the costs proportionate to the small size of the policies.

Reduce higher claims experience by becoming involved in community projects e.g. provision of clean water, or in providing preventative health measures e.g. vaccination, or providing education on the overall benefits of healthy lifestyles. Could aim to work closely with the government on educational initiatives.

Amend the product design, for example limit benefit payment period, have less generous claims definitions and appropriately worded exclusions, more initial underwriting, stricter claims management, provide rehabilitation support.

Use of reinsurance, if available

Use of tightly and clearly worded terms and conditions, e.g. to reduce potential for non-disclosure.

Reduce higher expenses by entering into joint venture with distribution partner or outsourcing some functions e.g. distribution, policy administration, claim handling, negotiate fixed per policy servicing cost, train more (cheaper) local staff.

Invest in good IT infrastructure for efficient payment and record keeping.

Use collective investment vehicles. As well as reducing investment costs and the cost of expertise, this may also limit adverse performance relative to other insurance companies. The potential for adverse investment performance can also be reduced by increasing the level of asset/liability matching, if possible.

Reduce poor withdrawal experience by offering renewal discounts and proactive premium collection and monitoring/reminders. Have appropriate commission structure depending on distribution channel.

Reduce fraud by educating policyholders about the effects of fraud on the availability and cost of insurance, careful selection and remuneration of local doctors and setting up clinics with medical staff directly employed by the insurance company (may also reduce claim experience if involved in preventative measures). The insurer may need to join with other insurance providers to share the costs of these initiatives.

Use domestic medical expertise for periodic audit of quality standards.

Reduce the effects of concentration of business by finding a joint venture partner or coinsurer to help diversify.

Part (i) was generally well answered and often in considerable detail, with the various considerations often set out under sub-headings, leading to a more structured answer. Candidates who did well were those who focussed on the specifics of the question, and in particular the micro-insurance aspect, using this to tailor points closely to the given scenario. A few candidates did not appear to have noticed that the product was to be launched overseas rather than in the UK.

Many candidates could have improved their score in part (ii) by remembering that the term “experience” covers more than just morbidity. Candidates who worked methodically through each experience item in turn were more likely to do well on this question part.

Part (iii) was a fairly standard experience management question, albeit in an unusual context. It was reasonably well tackled by many students, but others could have generated more points through thinking carefully about the highly tailored specific scenario and/or by considering a wider range of different types of experience, as noted for part (ii). Some points made were not directly linked to the question, which asks for ways of improving any adverse experience under this product. For example, suggestions such as updating assumptions, withdrawing from the market or getting better data would not serve to achieve this.

- 2 (i) For the health insurance risk sub-module, the three components are:
SLT health: Similar to Life Techniques, it comprises disability/morbidity, mortality, longevity, lapse, expenses and revision risks, e.g. the risk of adverse variation of the amount of a reviewable annuity under an income protection claim.

The SCR for SLT health is calculated using prescribed individual stresses, e.g. an increase of 35% in disability rates for the following year together with a permanent 25% increase thereafter; or an immediate and permanent 20% decrease in disability recovery rates which are then combined using a correlation matrix.

Non-SLT health: Non Similar to Life Techniques which comprises premium and reserve risks (fluctuations in the timing, frequency and severity of insured events, claim settlements and expense payments) and lapse risk. For each individual risk, the SCR is calculated using an approach that multiplies a volume measure by a specified standard deviation relating to that risk. This is then further multiplied by a factor that adjusts to the required confidence level.

CAT: health catastrophe risk

Based on extreme events, including epidemics. The company has to consider the balance sheet impact under standardised scenarios.

- (ii) Man-made catastrophes
Fire at a big building or stadium
Gas explosion
Collapse of a big building or stadium, mine collapse/disaster, burst dam
Terrorist attacks
Mass panic and disturbance of the peace on a large scale

Plane/train crashes/boat accident, other accidents on the water, traffic accidents, tunnel and bridge accidents
Accidents with inflammable or explosive materials, toxic matter, radioactive (nuclear) matter
Mass food/water contamination

Natural catastrophes

Earthquake, flood, tsunami, windstorm,
Other extreme circumstances of weather, e.g. prolonged drought
Wildfire
Volcanic eruption
Mudslide

Pandemic Events

Infectious disease threatens large populations of the public across a large region e.g. swine flu, bird flu, SARS, Ebola, particularly in areas with poor hygiene and/or heavy population density
A drug which has a latent adverse side effect and could cause mass sickness/disability

(iii) *Advantages*

Can tailor specifically to the risk profile of business. This is particularly useful if the risk profile of the business differs materially from that covered by the standard formula. It may even be a requirement of the regulator to use an internal model, if it feels that the standard formula is not appropriate to the risk profile of the company.

The standard formula can suffer from inflexibility; an internal model may allow more accurately for diversification of own business. Also, there is a risk of a standard formula changing.

The standard formula approach will most likely be calibrated conservatively; internal models could produce lower capital requirements. Hence there can be advantages in capital management and in pricing.

The development of internal models is likely to improve risk modelling and provide additional insights into risk profile. This should give those firms which use them a competitive advantage.

An internal model is likely to be an important part of most company's risk management framework.

May be relatively straightforward if the company already uses such a model for risk management or other decision-making purposes.

There may be greater external confidence in a company if it has its own approved internal model.

Disadvantages

An internal model will need to be approved and reviewed. There are also a number of tests that it needs to meet, which can be onerous. Internal validation process may also be onerous as can the documentation process. More work is required to maintain, review and update the internal model on an ongoing basis.

As well as embedding the model throughout the company, it will need to be able to show evidence that this is the case – which could be challenging. It could also prove difficult to explain the model to senior management/board.

The quality of data and assumptions can be an issue, particularly calibrating extreme events and it may be difficult to set up own correlations.

It will take significant time to develop which will add to costs and cause strain on resources, particularly for smaller companies. The necessary expertise may not be available in-house.

The benefit could be only marginally lower or even higher capital requirements.

The regulator approval process adds more delay to the implementation plan. Also, having spent the upfront costs, the model might not be accepted.

It could be harder for external analysts to understand e.g. credit rating agents to compare between companies.

This is likely to be a commitment for the insurer as it may be hard to go back to a standard formula approach.

- (iv) The tests that the model must pass before it can gain approval are:

The “Use Test”.

Companies have to demonstrate that their internal model is widely used throughout all relevant areas of the business and that it plays a significant role in the internal governance, risk management, decision-making, economic and solvency capital assessments and capital allocation processes.

Statistical quality standards

A number of minimum quality standards must be met relating to assumptions and data, including probability distribution forecasting, the use of expert judgement, materiality considerations and methods of aggregation.

Calibration standards

These standards aim to assess whether the SCR derived from the internal model has a calibration equivalent to the Value-at-Risk at 99.5% confidence over one year.

Profit and loss attribution

This includes a requirement to demonstrate how the categorisation of risk chosen in the internal model will be used to explain the causes and sources of actual profits and losses.

Validation standards

The internal model must have been fully validated by the insurance company and must be subject to regular control cycle review, including testing results against emerging experience.

Documentation standards

The design and operational aspects of the internal model must be clearly and thoroughly documented.

(v) Actuarial Function

Provide quantitative input into ORSA process and report.
Provide input to the risk identification and assessment process.
Co-ordinate the calculation of technical provisions, MCR and SCR.
Produce projection models to demonstrate future MCR/SCR coverage.
Assess the suitability of the methodology and model.
Assess data quality.

Compliance Function

Identify, assess, monitor and report the compliance risk exposure.
Provide input into the ORSA process and report in respect of compliance issues and related risks e.g. reputational.
Ensure that ORSA process is compliant with Solvency II legislation

Internal Audit Function

Carry out review of ORSA process and report.
Provide independent assessment.
Ensure that documentation produced is of required standard

Risk Function

Owner of the overall risk register / risk assessment process.
Oversee effective operation of the risk system and ORSA.
Oversee and challenge aggregated view on risk exposure and risk profile.
Identify and assess emerging risks.
Owner of the internal model.

Finance Function

Produce external financial reporting information and ORSA.
Support production of internal management information.
Provide financial information for strategic and business plans.
Develop and operate accounting systems.
Clean/improve the underlying data.

Underwriting Function

Identify, assess, monitor and report the underwriting risk exposure.
Input into the ORSA process and report in respect of underwriting issues.

IT Function

Enhance systems and models to support external and internal reporting.
Deliver data quality and documentation framework.

Investment Function

Manage and monitor investment exposure and strategies.
Provide asset data for internal and external reporting requirements.

Sales/marketing

Input to the levels/types of new business to allow for in the MCR/SCR projection.

Board/senior management

Has ultimate responsibility for meeting the ORSA requirements.
Demonstrate that the ORSA is being used for strategic decision-making.
Make decision regarding the appropriate confidence level at which the MCR and SCR should be met over the business planning horizon.

Part (i) was a bookwork question which was generally well answered, although some candidates misinterpreted the question as asking about the minimum capital requirements under Solvency I, thus demonstrating poor knowledge of the regulatory regimes as covered in the Core Reading.

In a list question where the answers are relatively short, such as part (ii), candidates should remember that a higher number of items will be expected to gain the marks than would be required for describe, discuss or explain type questions. Several candidates did not generate enough examples to gain a reasonable number of the marks available.

Part (iii) was generally well answered, particularly by those with a good understanding of the internal model and standard formula approaches, as described in the Core Reading.

Part (iv) highlighted the importance for many candidates of learning the bookwork thoroughly. Although generally well answered, several candidates did not provide sufficient explanation of the tests (noting the command word of the question), in particular the use test and the statistical quality or validation standards.

Part (v) was generally not particularly well answered. Few candidates thought about areas outside the four “standard” ones of actuarial, compliance, audit and risk functions. Solvency II is a very important area for health and care insurers at the current time, and candidates need to ensure they have a good working knowledge of this topic and can apply the bookwork ideas to practical business situations. [Note that marks were given for relevant points allocated to any reasonable function or business area.]

- 3** (i) ESA is payable to people of working age. It provides a replacement income if they have an illness or disability that affects their ability to work.

ESA consists of two phases: the assessment phase and the main phase. The basic assessment phase rate is paid for the first 13 weeks of claim while a decision is made on capability for work. This is done through the Work Capability Assessment.

There are two groups within the main phase:

Work Related Activity Group: a work related activity component is paid in addition to the basic rate in return for attending work-focussed interviews.

The Support Group: If the illness or disability has a severe effect on ability to work, the claimant will not be expected to take part in any work-related activity and will receive a support component in addition to the basic rate.

People in the Work Related Activity Group who do not attend work-focussed interviews do not receive the work-related activity component and their benefit level is equivalent to the Job Seeker's Allowance.

Contributions based ESA (for those who have paid sufficient National Insurance contributions) is taxable.

- (ii) The government needs to ensure that the support required for the one in six claimants who need support is available. A high proportion of claimants failed the test, this will justify to the government the switch to ESA since without this benefit change, these claimants may have continued to receive benefits at significant cost to the nation.

Just over one-third of the claimants dropped out of the application process – which seems high. This statistic therefore needs further investigation, particularly into the reasons, for example, whether the tests and their administration viable, whether the reputation of the tests such that many people who would qualify for support are dropping out or is the reputation such that it is discouraging people who would not pass the tests

Further insights might be provided by obtaining further breakdowns, for example by geographical area.

It would be useful to continue to monitor to see whether the population of claimants stabilises following the bedding down of the new processes.

The government may need to consider whether it should improve its communication of ESA requirements.

- (iii) Existing terms and conditions may not permit the claims management approach to be changed for current in-force contracts and such a change may be deemed to go against TCF requirements. A legal opinion may well be needed. If it can be applied to existing contracts there is the risk of selective lapsing.

Even if you can use the ESA approach for existing contracts, it may not be reasonable to apply it to existing claimants at review. On periodic claim review, it may not be possible for the ESA view to overturn the current view that the claim is valid if there has been no change in the medical status of the claimant. It seems likely that the change in approach can only be applied to new claims arising or perhaps even only to new policies sold.

Since the ESA rules are tighter than the current contract, this may prove a barrier to sales. Also, need to take into account the reaction of the sales force and/or brokers to the change in claim rules. Views may be different for each sales channel and need to take into account what competitor companies are doing. Need to ensure new product has very clear terms and conditions wording.

It may increase reputational risk if more claims are declined or if it is also applied to current claims being paid.

The ESA method of review is different in format, so the company will need to change its processes and there may need to be systems changes, with related costs and staff training implications. Need to consider how much change is actually needed to the existing product in order to use the ESA approach. It would be dangerous to promise that the IP product will follow the existing State rules particularly since State rules can change.

Tougher claims management should result in lower costs of claims both in terms of lower inceptions and earlier terminations. Therefore premiums could be reduced. On the other hand may not have appropriate data on which to re-price. The revised premiums may be sufficiently competitive to negate any negative perception and may even increase sales. Need to consider the overall potential impact on profits. Tougher claims management should also enable lower reserves to be held.

May be able to get cheaper reinsurance.

The proposal would not work for policies sold to 'house persons'.

Part (i) was a bookwork question which several candidates appeared to struggle with, thus demonstrating poor knowledge of the Core Reading.

Many candidates answered part (ii) successfully by systematically considering the different groups. This was a clear angle of approach that would enable a comprehensive answer to be formulated, and students who took this logical approach benefited from it.

Part (iii) was generally well answered, with candidates considering both the advantages and disadvantages of the proposal. Candidates who had exercised good time management throughout the exam, and so had sufficient time left for this final question part, were best placed to demonstrate their higher order skills to the examiners.

END OF EXAMINERS' REPORT