INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2020 Examinations

Subject SA1 – Health and Care
Specialist Applications

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and 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. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision

Mike Hammer
Chair of the Board of Examiners
July 2020

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Health and Care Specialist Applications subject is to instil in the successful candidates the ability to apply knowledge of the health and care environment and the principles of actuarial practice to the provision of health and care.

2. Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner are far more likely to satisfy the Examiners and receive a pass in the subject. Candidates will gain few marks if they do not address the question asked but merely write around the topic of the question.

3. 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. The Examiners' Report covers more points than would be expected to get full marks. This is so that alternative approaches to questions by different candidates can be accommodated.

4. It is often helpful to use subheadings when answering long part questions.

5. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on *student performance in this diet of the examination.*

This paper was less challenging than some SA1 papers in recent diets; this, together with the move to an open book exam, is reflected in the higher pass mark.

Well-prepared candidates scored well across most of the paper. Questions that required an element of analysis or application of knowledge to a particular situation, such as Q1(vii), Q2(ii) and (iii) and Q3(v) were generally less well answered than those that were mainly knowledge based. For these questions, candidates did not always provide a sufficiently broad range of points to score well or did not make points that related to the specific scenario set out in the question rather than just generic points to demonstrate that they could apply their knowledge.

It is encouraging to see many candidates using headings in their answers to the longer part questions and setting out their answers in a methodical manner which aids marking scripts.

The comments that follow the questions concentrate on areas where the candidates could have improved their performance.

C. Pass Mark

The pass mark for this exam was 62.
69 candidates presented themselves and 36 passed.

Solutions

Q1
(i)

Pillar 1

- Pillar 1 sets out the minimum capital requirements that firms are required to meet. [½]
- It specifies valuation methodologies for assets and liabilities ('technical provisions'), based on market-consistent principles. [½]

Under Pillar 1 there are two distinct capital requirements:

- the Solvency Capital Requirement (SCR); and [½]
- the Minimum Capital Requirement (MCR). [½]
- The MCR can be calculated by a simple factor-based linear formula which is targeted at a Value at Risk measure over one year with 85% confidence. [½]
- The MCR has a floor of 25% and a cap of 45% of the SCR, and this may bite for a significant number of health and care insurance companies. [½]
- There is an absolute minimum capital requirement of €3.7m for long-term insurance companies and €2.5m for short-term insurance companies [½]
- The SCR can be calculated using a prescribed standard formula approach, or by using a company-specific internal model, which has to be approved by the national regulator. [½]
- The SCR and MCR both represent capital requirements that must be held in addition to the technical provisions. [½]
- Supervisors may decide that a firm should hold additional capital (as a capital add-on) against risks that are either not covered or are inadequately modelled for the calculation of the SCR. [½]
- The SCR is a Value at Risk measure based on a 99.5% confidence interval of the variation over one year of the amount of 'basic own funds' (broadly assets minus technical provisions) [½]

Pillar 2

- Pillar 2 includes the supervisory review process, systems of governance and risk management. [½]
- Also under Pillar 2, each insurance company is required to carry out an Own Risk and Solvency Assessment (ORSA). [½]
- The ORSA requires each insurer to identify the risks to which it is exposed, including those not covered under Pillar 1, [½]
- To identify the risk management processes and controls in place [½]
- And to quantify its ongoing ability to continue to meet the MCR and SCR. [½]

Pillar 3

- Pillar 3 is the disclosure and supervisory reporting regime, under which defined reports to regulators and the public are required to be made. [½]

- The Solvency II structure has been designed to deliver a transparent and secure prudential regulatory system through the combination of: [½]
- minimum capital standards; [½]
- qualitative risk management requirements; [½]
- a well-defined and rigorous review process of companies' solvency by supervisors; and [½]
- prescribed disclosures to supervisors, policyholders and investors. [½]

[Max 4]

(ii)

(a)

Group reporting requirements

- Solvency II aims to enable insurance groups to be supervised more efficiently through a 'group supervisor' in the home country, co-operating with other relevant national supervisors. [½]
- This ensures that group-wide risks are not overlooked and should enable groups to operate more effectively, whilst continuing to provide policyholder protection. [½]
- It also aims to address the double use of capital within an insurance group (for example, where regulated entities make subordinated loans to each other), [½]
- And double leverage (where a parent raises debt which is then used to fund an investment in a regulated subsidiary, improving the solo capital position of the regulated entity). [½]
- The insurance group must cover its overall group SCR (which allows for diversification benefits across the group), [½]
- as well as its group solvency floor (which is calculated as the sum of MCRs, or local equivalent, for each insurance or reinsurance entity within the group) [½]
- Each insurance subsidiary needs to cover its own SCR and MCR. [½]
- Group supervision would normally be carried out at the top level company, which may be within the European Economic Area (EEA) or in a 'third country', i.e. non-EEA. [½]
- Solvency II requires that where there is a third country parent, EEA supervisors must assess whether the third country parent is subject to 'equivalent' group supervision. [½]
- Depending on this assessment there may be further requirements imposed, which could include establishing an EEA-based holding company. [½]

[Max 3]

(b) Third country equivalence

- If an aspect of a third country regulatory regime is considered to be broadly compliant with Solvency II, then that aspect of the regime can be said to be 'equivalent'. [½]
  This 'equivalence' can be granted in three different situations:
- The solo solvency regime in the third country is equivalent. [½]
- The group supervision regime in the third country is equivalent. [½]
- The solvency regime as applied to reinsurance activities is equivalent. [½]
- Equivalence can be 'full' (granted for an indefinite period), [½]

- 'temporary' (granted for a limited period that will end on 31 December 2020 or on the date on which the prudential regime of the third country is deemed equivalent, whichever is earlier), [½]
- or 'provisional' (granted for a ten year period with possible extension for further ten year periods). [½]

  NB The 2020 Core Reading for 'temporary/provisional' was incorrect with 'temporary' and 'provisional' interchanged in the above. Credit should be given for either version based on the correct definition of each above or that in the 2020 Core Reading.

- For example, Bermuda and Switzerland have been granted full equivalence. [½]
- Japan, Australia, Brazil, Canada, Mexico and the USA have been granted temporary equivalence. [½]

[Max 2]

(iii) <u>Community Rating</u>

- Community rating most often refers to the practice of charging all policyholders (or a significant subset of the persons insured) the same premium rate irrespective of rating factors such as age, gender and medical history. [1]
- Community rating sometimes refers to the process of applying tabular rates to applicants irrespective of claims history. [½]

[Max 1]

(iv)

<u>Advantages</u>

- This system prevents health insurers from discriminating between people on the basis of their health, gender, age, etc. [1]
- It may therefore be viewed as 'fair' by policyholders which may attract business [½]
- It prevents those people who are genetically at a higher risk for adverse health events from paying higher premiums and being priced out of the market, and [½]
- Makes insurance accessible and affordable to those who are most vulnerable in the society. [½]
- Community rating means that everyone is entitled to buy the same product, at the same price, and is guaranteed the right to renew their policy. [½]
- Could help compliance with local regulation (e.g. by avoiding discrimination) [½]
- Provides simplicity in terms of explanation to the customer [½]
- And in terms of the company's operations / processes [½]
- Simplicity could mean reduced cost of operations [½]
- Some policyholder subgroups will like this approach, particularly if they are charged less than the true cost of their benefits. [½]
- It is particularly useful for group schemes to help keep costs low. [½]

<u>Disadvantages</u>

- On the other hand, this system increases the costs of those who are better risks. [1]
- Some policyholder subgroups will not like this approach, particularly if they are charged more than the true cost of their benefits. [½]
- Moral hazard - this system may encourage people to engage in risky or costly behaviour because they will not be rewarded financially for having better health. [1]
- In order to be affordable, community rated health insurance requires both high participation rates and some form of risk equalisation. [1]
- If private medical insurance is not mandatory in a community rating system, better risks may choose not to purchase insurance at all. [½]
- Leading to a risk of anti-selection [½]
- This could lead to high costs to those who choose to purchase private medical insurance, who are likely to be the less healthy and/or older age groups. [½]
- The mix of business may be different to that expected and so the cross-subsidies between healthy and less healthy lives assumed may not be met. [½]
- If only people with high expected claims costs decided to insure, premiums would be unaffordable regardless of how claims are shared between insurers. [½]
- The company cannot charge accurate premium for policyholders… [½]
- …. Therefore it may need to hold higher margins of prudence in pricing / reserving to allow for uncertainty of future claims experience. [½]

[Max 4]

(v)

Risk Equalisation

- Risk equalisation applies in some markets whereby the profits or losses on specified policies or risks are pooled and reapportioned among participating insurers so that each shares in the average market experience. [1]
- It is a mechanism by which the cost of health care for higher risk individuals (primarily age based) is shared among the private medical insurance industry. [1]
- Risk equalisation supports community rating by redistributing costs between risk groups. [1]
- It aims to ensure that health insurers who have a higher risk (primarily age based) profile of policyholders are not adversely affected by large medical claims for higher risk policyholders. [1]

[Max 2]

(vi)

(a) Purchasing a local health insurer

Advantages

- The target could be an established health insurer, with good brand name & reputation, and [½]
- significant market share. [½]
- The target will have local knowledge and expertise in the private medical insurance market. [½]
- There is already an established workforce, and [½]

- Office premises and equipment. [½]
- There will be a portfolio of in-force business from day 1 post the takeover. [½]
- Retention / Policy renewals could be high if the target has good customer satisfaction records. [½]
- All the systems, processes and arrangements are already in place, which include: [½]
  - IT and policy systems [½]
  - Data and historical experience analysis [½]
  - Underwriting systems and processes [½]
  - Pricing systems and processes [½]
  - Reserving and solvency capital systems and processes [½]
  - Claims management systems and processes [½]
  - Arrangements with third party healthcare providers and hospitals [½]
  - Reinsurance arrangements [½]
  - Distribution channels [½]

[Credit given for up to 2 examples]

<u>Disadvantages</u>

- It may be difficult to find a suitable target. [½]
- The target company and Group A may not fit culturally. [½]
- The purchase price could be too high, due to competition. [½]
- A change in brand name post takeover could have adverse effects on policy retention / renewals. [½]
- There could be legacy issues. e.g. mis-selling, pension deficit. [½]
- Systems and processes could be out-of-date, inefficient and ineffective. [½]
- Upfront costs of reserving and capital requirement, both locally and at the group level, could be high. [½]
- There is the risk of losing key staff post takeover. [½]
- Initial pricing and underwriting strategies could be heavily driven by the target's existing practices, [½]
- Which may not be in line with Group A's new business strategy and target level of profitability. [½]
- There may be a limit on the percentage holding of a company in country X [½]
- Or constraints or restrictions placed on foreign ownership of companies within Country X. It may even make this approach impossible. [½]

[Max 4]

(b) Joint venture with a local insurer who will be fronting the sales

<u>Advantages</u>

- Group A would only take on the underwriting risk, an area in which it has plenty of experience. [½]
- Group A will have complete control over product design and pricing of the underwriting risk. [½]
- There is no need to establish significant workforce locally, if the joint venture partner takes on most of all the admin, underwriting and claims management tasks. [½]
- The local insurer will have local knowledge, and [½]
- An established network of distribution channels. [½]
- It should have an existing customer base to which Group A could cross-sell private medical insurance. [½]
- There should be no issue with brand name. [½]
- Group A could undertake all the pricing and reserving tasks at the group level. [½]
- Upfront development costs should be relatively lows. [½]
- There is less concern over cultural fit as this is a partnership rather than a takeover. [½]
- Group A will have complete control over its pricing policy and target profitability. [½]
- Group A may not be required to report locally under Country X's solvency regime, so reporting requirements could be less onerous than the other two options. [½]
- The joint venture will allow it to share the risk of launching the new product (as well as the profits). [½]
- Potentially easier to get out of the arrangement than (a) if advantages don't materialise. [½]

<u>Disadvantages</u>

- It may be difficult to find a suitable venture partner. [½]
- The financial terms of the joint-venture agreements will need to negotiated, which could mean passing more profits externally than the other two options. [½]
- Group A would not have direct control over marketing and sales of the new products, [½]
- Nor direct control over the arrangements and commission scale with the distribution channels. [½]
- There is a risk of mis-selling if the advisors don't have experience selling health and care, or the wrong channels were used. [½]
- The success of this joint venture is heavily reliant on the local insurer's past and future reputation and brand loyalty, which is outside the control of Group A. [½]
- There is still the need to establish arrangements with local healthcare providers and hospitals. [½]
- There is no historical data and past experience for pricing. [½]
- Whilst Group A does have control of the pricing for the product it lacks experience of community rating and risk equalisation. [½]

- Group A will need to consider the practicalities of underwriting the product, for example local differences in phrasing in forms, accessibility and reliability of information *etc*. [½]
- It may be exposed to risk of anti-selection and worse claims experience given its lack of experience pricing this type of cover. [½]
- Although the local insurer has local knowledge, it does not have the expertise in private medical insurance. [½]
- The systems of the existing insurer will need to be expanded to allow for health insurance which will add a cost. [½]
- The expense loading required by the local insurer could be too high to make the premium rates competitive in the local market. [½]

[Max 4]

(c) Set up a new insurance entity

<u>Advantages</u>

- Group A would have complete control over the business strategy from day 1, which include: [½]
  - Product design [½]
  - Pricing strategy [½]
  - Target profit [½]
  - IT and admin systems [½]
  - Underwriting systems and processes [½]
  - Pricing systems and processes [½]
  - Reserving systems and processes [½]
  - Claims management systems and processes [½]
  - Arrangements with third party healthcare providers and hospitals [½]
  - Reinsurance arrangements [½]
  - Distribution channels [½]

[*Credit given for up to 4 examples*]

- Unlike the other two options, the level of set up / development costs would not be influenced by any competitive pressures externally. [½]
- This is no risk of any legacy issues such as mis-selling, pension deficit etc. [½]
- A takeover target may not be available at present, setting up a company could allow Group A more flexibility in terms of future acquisition options. e.g. purchase a block of business rather than the entire company. [½]

<u>Disadvantages</u>

- Group A will need to obtain authorisation for the new insurance entity to operate locally from Country X's regulator [½]
- And the process could be onerous. [½]
- As group A is based outside Country X there may be many barriers to setting up the company. [½]

- The resource requirements to obtain authorisation could therefore be high. [½]
- There is always the risk that the application for authorisation is unsuccessful. [½]
- There will be the need to find suitable office premises. [½]
- Arrangements with third parties will need to be established, which include: [½]
- local healthcare providers and hospitals [½]
- underwriting and claims management [½]
- reinsurance [½]
- distribution channels [½]

[*Credit given for up to 2 examples]*

- The initial set up costs could be very high while there is little or no in-force business. [½]
- Group A on its own lacks the immediate expertise in the local market. [½]
- Group A does not have a brand name locally. [½]
- There is no data and past experience for pricing. [½]
- Group A will need to investigate and work out the impact of local reserving and solvency capital requirements. [½]
- Group A will be accepting all of the risks of launching the new company / product itself, which would increase the costs and capital requirements. [½]
- The lack of data and experience may mean it needs external support, again increasing the costs. [½]

[Max 4]

(vii)

<u>Products</u>

- Range of products offered by Company B. [½]
- Group, individual or both. [½]
- Consider the features offered, particularly on the PMI products; for example, are they generally indemnity or are there limits on claims [½]
- Has Company B launched any new products recently? [½]
- Has Company B stopped selling any legacy products? [½]
- How do Company B's products compare with the other health insurers in the market. [½]

<u>Pricing</u>

- Pricing approach and assumptions used for each major product segments. [½]
- Consistency of pricing assumptions with historical claims experience. [½]
- Credibility of Company B's own data. [½]
- Profit margin allowed for in pricing. [½]
- Analysis of historical business renewal rates (persistency). [½]
- Analysis of historical brand new business rates (conversion). [½]
- Allowance for medical inflation in claims assumptions. [½]
- Allowance for expenses including expense inflation in pricing. [½]

- Commission levels. [½]
- Sensitivity of profits to changes in key assumptions. [½]

<u>Level and type of competition</u>

- Company B's main competitors in Country X. [½]
- Competitive position. e.g. total number and market share of competitors. [½]
- Company B's market share and ranking in the market. [½]
- Total current market size [½]
- Total potential market size [½]
- Annual growth in market size over the last, say 5 years [½]
- Have the other competitors experienced the same level of static new business growth [½]
- Price elasticity in Country X. [½]
- Brand loyalty. [½]
- Investigation of premium rates offered by competitors. [½]
- Investigate the success or otherwise of other international health group operating in the market. [½]

<u>Financial performance</u>

- Detailed analysis of Company B's business growth over the last, say 5 years. [½]
- Reasons for the static business growth. [½]
- For example, was it caused by low new business volume or rapidly declining in-force book. [½]
- Detailed analysis of Company B's profitability over the last, say 5 years. [½]
- Analysis of main source of profits, by major product segments. [½]
- Investment performance of assets held. [½]
- Liquidity position. [½]
- Quality and structure of asset portfolio. [½]
- Asset and liability matching position. [½]
- Any high risk investments e.g. derivatives. [½]
- Whether Company B is a contributor (paying money into) or receiver (receiving money) of the community rating system. [½]
- If Company B is a contributor, this may imply that the average age of its policyholders is lower than the market average. [½]
- Profile of Company B's existing policyholders. [½]
- Whether Company B is a contributor (paying money into) or receiver (receiving money) of the risk equalisation system. [1]
- If Company B is a contributor, this may imply that the average profitability is better than the market average. [½]
- Its declining profit may therefore be caused by the overall market's performance rather than the underperformance of its own products. [½]
- Company B's projected business plan for next, say 5 years, [½]

- Ideally based on different scenarios of best estimate, pessimistic and optimistic bases. [½]

Operational & infrastructure

- Quality of the Company B's workforce particularly its senior management. [½]
- History of industrial relations. [½]
- Internal controls e.g. fraud prevention, risk management. [½]
- Any possible legacy issues. [½]
- Quality of policy records, literature. [½]
- Complaints history and outstanding complaints [½]
- Any potential mis-selling issues and any other outstanding reputational/legal issues. [½]
- Underwriting practices. [½]
- In particular whether insurers are allowed to underwrite prior to accepting risk under the community rating system in Country X. [½]
- Claims management practices. [½]
- Quality of policy and admin systems. [½]
- Quality of data protection practices and standards. [½]
- Quality and tariffs of existing outsourcing arrangements, in particular with health care providers and hospital groups. [½]
- Quality and costs of existing reinsurance arrangements. [½]
- Group A should consider how the reinsurance exposure fits with its existing exposure, [½]
- For example, do they use the reinsurer which may increase its single counterparty exposure [½]
- Quality of property, including its own office premises, hospital, care homes and dental clinics. [½]

Sales

- Types of distribution channels used. [½]
- Volumes sold through each type of distribution channel. [½]
- Quality of distribution channels. [½]
- Commission structure. [½]

Reserving and Capital Requirement

- Historical loss ratios of the business. [½]
- Results of back-testing / Actual vs Expected. [½]
- Results of premium adequacy tests. [½]
- The solvency capital requirement approach in Country X, e.g. formula, risk-based or other, for local reporting purposes. [½]
- How does it compare with Solvency II, for the group reporting purposes. [½]
- Adequacy of local statutory reserves. [½]
- Solvency ratio on a solo local basis. [½]

- Implications on group's reserving and solvency position in the group's consolidated financial statements. [½]
- Any diversification benefits or fungibility (transferability) issues relating to capital at the group level. [½]
- Consider the existing outstanding claims and IBNR and IBNER allowances for the company. [½]

<u>Other</u>

- Is there sufficient credibility in the information provided by C? [½]
- Cultural fit with Group A. [½]
- What are the main reasons for Group C to sell Company B. [½]
- What is the price being charged for Company B? [½]
- How much of the price is made up of 'goodwill'? [½]
- Why did Group C invite a main competitor such as Group A to enter a bid. [½]
- How many other bidders are competing in the bid? [½]
- Consider the speed of sale – does Group C need this to happen quickly [½]
- Does that fit with Group A's requirements [½]
- Alternative investment options, other potential targets [½]
- Does Company B meet all of the takeover objectives? [½]
- Plans for the workforce, offices. [½]
- Integration/migration plan. [½]
- Any additional costs of the takeover (e.g. advisors, legal, stamp duty etc.). [½]
- Payment method e.g. cash only [½]
- And availability of sufficient existing capital to fund the purchase [½]
- Or, if not, ability to raise it and the related cost of capital [½]
- Credit rating of target and likely impact on own credit rating. [½]
- General economic outlook in Country X. [½]
- Any specific regulatory constraints in Country X. [½]
- Consider any restrictions on sales methods/rating factors etc [½]
- Potential level of management distraction and whether it would have a negative impact on other key projects. [½]
- Market reaction if purchase goes ahead. [½]
- Shareholder reaction if purchase goes ahead. [½]
- Other recent similar deals (their price, lessons learned etc). [½]
- Who will pay outstanding claims. [½]
- Country X's tax regime, [½]
- and any potential tax issues at group level. [½]
- Exchange rate volatility: the value of Country X's currency relative to the currency in which group reporting is denominated. [½]
- Investigate the extent to which this can be hedged, and the related cost. [½]

[Max 20]
[Total 48]

Most candidates scored very well in the bookwork questions, Q1(i), Q1(ii), Q1(iii).

Q1(iv) was generally well answered, although few candidates discussed the possibility of moral hazard or that if private medical insurance is not compulsory the better risks may choose not purchase insurance leading to higher costs for those who choose to purchase medical insurance.

Q1(v) was reasonably answered, although several candidates did not realise that the system involves pooling and sharing profits and losses on specified policies or risks between the participating insurers.

Q1(vi) was generally very well answered with candidates providing a wide range of points, for example discussing under each of the options the amount and type of risk the group would be taking, the amount of control it would have, the potential cost, the fit with the group's exiting operations, and factors such as legacy issues, regulation, branding, local knowledge.

Well prepared candidates scored well in Q1(vii); however, many candidates did not generate sufficient points to score highly. For example, only the better candidates provided a detailed consideration of products of Company B, or discussed the information that would assist in understanding the factors that may have contributed to the declining profits or the reserving and capital requirements, e.g. loss ratios, capital adequacy, whether company was a net contributor or receiver from equalisation scheme.

Q2

(i)

- Company should select investments that are appropriate to the nature, term and currency of the liabilities. [½]
- The investments should also be selected so as to maximise the overall return on the assets, where overall return includes both investment income and capital gains. [½]
- The extent to which (a) may be departed from in order to meet (b) will depend, inter alia, on the extent of the company's free assets and the company's appetite for risk. [1]

Or

- The company should invest so as to maximise the overall return on the assets, subject to the risk being taken on being within the financial resources available to it. [2]

[Max 2]

(ii) General

- The impact on the company's reserves and capital requirements will depend on the relative differences in capital and reserving regulations for the Association and for Country Y. [½]

- The changes could lead to a significant change in methodology and the assumptions used to calculate reserves and capital…. [½]
- …..for example the rules for the Association could have been very simple but country Y could want more complex Solvency II type rules (or vice versa). [½]
- Any changes to the regulation would require re-calculation of reserves and capital requirements on the new basis. [½]
- Material changes in methodology and assumptions could lead to the reserving and capital requirements being more, or less, onerous than before. [½]
- If the changes in methodology and assumptions are not material then there may not be a material change in reserving and capital requirements. [½]
- Before leaving, Regulators in country Y accepted that the capital requirements for companies were appropriate for the risks. After leaving Regulators in country Y would seek to have capital requirements as least as strong as in the Association unless there is a material change to risks. [½]
- Insurers in country Y will resist any strengthening of capital requirements and look to have a weakening to reflect at least the credit risk changes. [½]
- If the requirements for country Y are more onerous than the requirements for the association there could be a significant increase in reserves and/or capital for companies. (the opposite is true if the requirements are less onerous) [½]
- The immediate impact on reserves and capital held will depend on how quickly Country Y will move to the new rules. [½]
- There may be a transitional period before Country Y leaves the association. [½]
- The regulator of Country Y could allow transition arrangements for the new rules to be implemented after Country Y leaves the association… [½]
- ….this may be likely given that Country Y had flexible and pragmatic rules before joining the association whilst other counties are less stable. [½]
- In these cases there would be no immediate impact. [½]
- Eventually companies will need to hold reserves / capital that are line with the new regulations of country Y. [½]
- The differences in reserving methodology and capital requirements may depend on who is involved in setting the new regulations. Country Y may have been heavily involved in setting the association rules, in which case Country Y’s reserving and capital requirements could be consistent with the Association. [½]
- From a real-world perspective, the change in the association membership will mean that there is no change to sovereign gilts from countries other than Y, that is no change to market yields, asset values and credit and liquidity. [½]
- Leaving the association is expected to increase the creditworthiness of gilts issues by Country Y. Credit rating agencies should therefore improve the rating, which in turn should increase the price for the gilts as they are more secure. [½]
- An increase in the price of the gilt will lead to a reduction in the yields on these assets. [½]
- Further, after the change insurers will also benefit from the lower credit and liquidity risks. [½]

- The impact on Reserves and Capital will depend on the amount of gilts held by an insurer in Country Y. [½]

Reserves

- The impact on reserves will depend on the valuation rates before and after the change (all else unchanged). If valuation yield is higher after the change then reserves will reduce (and vice versa). [1]
- If the valuation discount rates reflect risk free rates before and after the change then there will be no change to reserves. [½]
- If, after leaving, the reserves in country Y are calculated on a risk free discount rate and the reserves in the association are based on market rates then the reserves will reduce if the risk free rate is greater than the valuation yield used in the association. [½]
  [*Mark given if the reverse argued*].
- If the reserves in country Y before and after leaving are based on market rates then the impact on reserves will depend the following impacts: [½]
- Leaving the Association will result in a decrease in gilt yields which will push reserves up [½]
- The insurers will be able to allow for lower deductions for credit and liquidity in the valuation rate in respect of Country Y's gilts, thereby increasing the valuation rate compared to the association rules this will push reserves down [½]
- Other country's gilts may have a higher credit risk and liquidity risk than allowed for within the Association's rules this will tend to reduce the valuation rate thereby pushing up reserves. [½]
  [*Mark given if the reverse argued*]
- If the reserves before and after leaving the association are market consistent and calculated on a best estimate basis a risk margin will be required. [½]
- … this is amount required to be paid to transfer the business to another undertaking. [½]
- Risk margins may be dealt with by adding a risk margin to each assumption or using a cost of capital approach. [½]
- If a cost of capital approach is used then the impact on reserves (technical provisions) will be affected by the assumed cost of capital rate: [½]
- a lower rate after leaving will push down the risk margin (and vice versa) [½]
- and the assumed discount rate, a higher rate after leaving will push down the risk margin (and vice versa) [½]

Capital Requirements

- If the Association and country Y after leaving uses a Risk Based regime, then there will be a change to the treatment of market risks. [½]

The overall impact will depend on the following impacts

- After leaving market risks will be lower for Country Y's gilts. [½]
- … lower capital requirements for credit risk, [½]
- … lower capital requirements for spread risk and [½]
- .... lower capital requirements for liquidity risk as these all reduce for Y's gilts. [½]
- Interest rate risks may also change as yields on country Y's gilts will reduce after leaving. [½]
- Leaving may also require a review of asset correlations which may have an impact. [½]

- There may be an increase for Country Y's insurers in the capital for credit risk, spread risk and liquidity risk for other country's gilts. [½]
- On balance, expect country Y's insurers to hold a larger proportion of Y's gilts than other gilts so expect there will be a reduction in capital for these market risks. [½]
- If the capital requirements of the Association and/or the capital requirements after country Y leaves are based on prudential rules the impact will depend on the level of security that Country Y's Regulators decides to adopt. [½]
- As the Capital requirements may not explicitly reflect specific risks and so unclear of the impact. [½]
- Unlikely to be any asset admissibility issues or concentration limits with the change for Y insurers since the assets that change are gilts. [½]
- Although the underlying risks are not changing, in the new reporting regime Country Y's insurers could report lower risks and so have lower capital requirements. [½]
- Solvency capital requirements could be specified as a formula, [½]
- or it may be calculated using a risk based approach such as Value at Risk (VaR)…. [½]
- ….. normally expressed at a minimum required confidence level (e.g. 99.5%) over a defined period (e.g. one year). [½]
- The method of determining capital will determine both the absolute amount of capital held, and how sensitive the amount of capital held in the future will be to changes in experience. [½]
- For example, if capital is defined as a fixed percentage of reserves then a fall in reserves could lead to a reduction in the amount of capital held. [½]
- Regulators usually require that an insurer maintains at least a specified level of solvency capital in addition to the reserves or technical provisions held…. [½]
- …. if the minimum capital amount bites then moving to the new basis may not impact the amount of capital held. [½]

<u>Other Possible Impacts</u>

- Leaving the association may cause uncertainty within Country Y which could lead to: [½]
- Downgrading of credit rating of insurers leading to additional capital requirements [½]
- A depreciation of the currency which may increase gilt yields [½]
- Unemployment which may impact the price of equities and gilts. [½]
- Although there may be liquidity in short-dated gilts, longer dated gilts in Country Y may experience a less liquid market after leaving the association e.g. if there is political instability. [½]
- The relative effects on reserves and capital requirements will depend on the domestic and international economic reactions to Country Y leaving the association. [½]
- Leaving the association and the uncertainty more generally could affect factors such as new business volumes. These and any potential future changes in regulations, could lead to additional capital being required. [½]

[Max 10]

(iii)

a)

Country Y health and care insurance companies

Option 1: Retain the rules of the association at the date of independence and subsequently incorporate any other rules made by the association.

- No changes to systems [½]
- Limited changes to T&C i.e. wording only needs to be updated [½]
- Limited resource and expertise required to comply with the new rules… [½]
- …So implementation is low in terms of cost /resource [½]
- And potentially no increase in premiums for customers [½]
- Still able to sell in all countries in the association [½]
- Could be the opportunity for passporting but this would need to be confirmed (i.e. can’t assume that it will definitely be allowed) [½]
- There should be no currency, investment, reserving changes required [½]
- Companies would be subject to the same regulations as their competitors [½]
- Will have to implement changes they have no opportunity to change [½]
- No control over timescales etc to implement new rules [½]
- May not wish to sell everywhere in the association [½]

Option 2: Retain the rules of the association at the date of independence but decide on a rule by rule basis whether to adopt any future association rule changes.

- Initial certainty of no changes…. [½]
- ….but it is uncertain what will happen in the future. [½]
- It could lead to more country specific regulations and therefore more appropriate (and lower) capital requirements, without a large-scale change. [½]
- Difficult trading environment as there is no certainty as to whether an announced change will be required in Country Y [½]
- Different rules from their competitors if they are registered outside Country Y[½]
- Not clear if insurers will be able to sell outside Country Y if they don’t adopt all the rules [½]
- May lead to higher reserves and margins than their competitors [½]
- Could result in a much more complex system for insurers to comply with… [½]
- .. leading to a risk of incorrectly applying the regulations and incurring fines. [½]
- There may be frequent changes required, leading to additional costs. [½]

Option 3: Return to Country Y insurance regulations.

- Country Y has a reputation of consulting its insurers, so they will now have an opportunity to influence changes in regulation [1]
- Will use the most appropriate regulation for their business [½]
- Will not be disadvantaged in comparison to insurers regulated outside Country Y as they will have to use the same regulations to sell within Country Y [1]
- Quicker to develop innovative products meeting the needs of the Country Y’s market [1]
- May lead to lower reserves/margins so lower costs and more competitive premiums [½]
- And more sales [½]

- Old rules may not reflect current best practice for insurance companies (e.g. could be on old prudential basis)… [½]
- Or otherwise out-of-date [½]
- …..and may not adequately reflect risks of insurers business. [½]
- Potentially a significant change for the insurers to have to implement, depending on how far the regulations differ [½]
- The insurer may no longer have the experience, expertise or models available to implement the previous regime. [½]
- It could lead to capital increasing, depending on how the regulations differ. [½]

Option 4: Allow insurance companies to follow either regulation; provided they can demonstrate they are at least equivalent to Country Y insurance regulations.
- Still able to sell everywhere [½]
- Potentially same regulations as their competitors [½]
- Are free to choose least expensive regulation [½]
- Need to register in both regimes [½]
- Complex, will need to carry out 2 reporting/registration processes and then demonstrate equivalence [1]
- Time and cost of (legal) argument to demonstrate equivalence [½]
- Potentially less competitive if they have to use more onerous regulation for some parts of the rules [½]
- Will need changes to systems [½]
- Will need changes to T&C [½]
- Not clear if can pick some rules from each regime or have to opt for one or the other [½]
- Higher levels of capital required [½]
- Higher margins for uncertainty [½]
- So potentially less competitive products [½]

[Max 12]

b)
Country Y consumers
Option 1:
- Still same number of insurance companies so should be same choices [½]
- And competition leading to costs and premiums staying down [½]
- But less choice and higher costs if Country Y companies have to implement unsuitable rules and choose to stop trading [½]
- Under the other options there may be more opportunity for innovative products to be marketed [½]

Option 2:
- If capital requirements are lower, there may be increased product innovation here. [½]

- Halfway house with products more suitable to their needs than full adoption of association rules [½]
- Potentially fewer insurance companies, higher costs of regulation etc so higher prices [½]

Option 3:
- Prices may fall if burden of regulation is less, [½]
- And as a result of lower reserves and margins [½]
- Potentially better protection as the regulation is relevant to the Country Y's market [1]
- More scope for innovative products which meet their needs [½]
- Products more tailored to Country Y's market [½]
- Prices may rise if leads to fewer companies selling insurance [½]
- However, original regulations may not adequately reflect risks of insurers business which will offer less protection for policyholders [½]
- If there are costs of changing regulations that could lead to less innovation as insurers are busy dealing with that. [½]
- If capital requirements increase it could lead to less innovation too. [½]

Option 4:
- Similar number of competitors [½]
- Less justification for price rises [½]
- If Country Y regime is at a higher level will provide higher level of protection [½]
- If Country Y regime is a lower level may result in less or no choice of insurer to maintain existing levels of protection [½]

[Max 4]

c)
Country Y Regulator
Option 1:
- No costs of amending or producing new regulations. [½]
- Systems and processes stay the same, no training required. [½]
- Locked into implementing regulations they can't change [½]
- and/or don't believe are cost effective [½]
- No control over their market [½]
- Unable to quickly introduce regulations to respond to changes in the market and protect consumers [½]
- May still have to pay compensation if businesses fail even if due to regulation they don't approve [½]

Option 2:
- It could lead to more country specific regulations over time [½]
- Whilst retaining aspects of the current regulatory regime the regulator felt to be useful [½]

- This could lead to more appropriate (and lower) capital requirements, without a large scale change [½]
- Will have to consider every regulation that comes from the association and decide whether to implement, giving rise to time and resource costs [½]
- Could result in a much more complex system for regulators to regulate. [½]
- Still have costs of setting their own regulation [½]

Option 3:

- Easier to regulate against its own rules [½]
- Going forward it can implement rules developed in consultation with the insurance industry operating in the country [½]
- Need resource to make its own rules [½]
- And consult on them [½]
- However, original regulations may not adequately reflect risks of insurers business which will offer less protection for policyholders [½]
- Need to amend processes and systems, may lack expertise and experience. [½]
- Possible reputational issues e.g. if seen as moving away from a more consumer orientated regulatory regime to one more influenced by the insurance industry [½]

Option 4:

- Will have a regulatory regime that may be more specific for Country Y as an underpin [½]
- Complex [½]
- Time and resource of establishing which regulations are most onerous/protective [½]
- Locked into implementing regulations they can't change [½]
- And/or don't believe are cost effective [½]

[Max 4]
[Total 32]

Question 2(i) was bookwork and was very well answered.

Most candidates did not score high in Q2(ii). The impact on the company's reserves and capital requirements will depend on the relative differences in capital and reserving regulations for the Association and for Country Y. The options on the potential changes in solvency regime gave scope for candidates to score lots of points. For example, if the new regime was similar except for the treatment of credit risk in the valuation basis and capital requirements or if the new regime is not risk based but based on prudential rules. The solution covers a variety of possible scenarios; candidates were not expected to cover all of these scenarios to earn full credit.

For reserving the main change is the impact on the valuation rate and the better candidates considered the potential effects of the change on this, depending on whether the valuation rate was a risk free rate or market rate before and after the change. Similarly the effects on capital requirements would depend on whether the regimes were *risk-based or not before and after the change. Few candidates discussed the potential effects on solvency requirements in detail.*

In Q2(iii) most students did not generate sufficient points to score highly, particularly for the impact on the insurance companies. For example, few candidates discussed the practical issues that would arise in changing systems and operating in different countries with different solvency standards. Insurers would also need to consider the complexity of the resulting arrangements, the effects on where they could sell products and the effects on competitors. For consumers the main considerations would be the potential effect on product choice and premiums and the degree of protection they would have. The regulator would also be concerned about the level of protection consumers would enjoy but also the degree of control it would have over the regulations issued, the complexity of the resulting regulatory regime and its capacity to produce and monitor regulations if these were taken in-house.

Q3

(i)

- Provide excellent service standards [½]
- Claims management – high proportion of acceptance paid and payment of claims made quickly [½]
- Credit rating/financial strength [½]
- Price – cheap premiums [½]
- Underwriting – quick acceptance, fewer questions [½]
- Commission terms to brokers [½]
- Expand distributors, e.g. online [½]
- Brand / Company image via advertising [½]
- Free gifts e.g. gym membership, wearable devices etc [½]
- Discounts to other (own) products [½]
- Discounts to other (consumer) products [½]
- Using online policy and claims management (insurtech) to allow customers to manage their policy and claims easily. [½]

[Max 3]

(ii)

- Assess potential demand for this option (e.g. market survey) [½]
- Decide on cancer definition for children's cover [½]
- Exclusions e.g. pre-existing congenital defects [½]
- Decide on benefit payable for children's cover and term [½]
- Will multiple claims be allowed for children's cancer (i.e. two children from the same family both developing cancer) [½]
- Review premium rates [½]
- Estimate additional sales [½]
- Estimate impact on future claims experience [½]
- Is there any credible data to assess additional risk? [½]

- Consider any existing provisions such as screening [½]
- May need external help, e.g. consultants, reinsurers [½]
- Update literature/ terms and conditions to include the option [½]
- Policyholder communications – if this it to be made available to existing customers [½]
- Update application form for the children's cover option [½]
- Update administration system to reflect the product change [½]
- Update underwriting processes [½]
- Update claims processes [½]
- Ensure administration staff trained on product and IT changes [½]
- Ensure sales staff trained on product changes [½]
- Estimate cost of implementation [½]
- Consider impact on product profitability / capital [½]
- Consider competitors responses [½]
- Update company's business plan [½]
- Consider potential reputational issues (e.g. it may be difficult to decline any claims for children's cancer) [½]
- Discuss risks at board level [½]
- Discuss product change with reinsurer [½]
- Make changes to reinsurance treaty [½]
- Update reinsurance rates [½]
- Communicate changes to brokers [½]
- Review pricing/ reserving/ embedded value reporting assumptions [½]
- Update models for pricing/ reserving/ embedded value reporting [½]
- Update claims analysis processes [½]
- Discuss with regulators [½]
- Consider opportunity costs (i.e. would capital required be better used for other purposes) [½]

[Max 6]

(iii)

- The morbidity charge is the income to the insurer to cover of the cost of the risk that the policyholder incurs a critical illness resulting in the payment of the sum assured as a claim. [1]
- Sum at Risk multiplied by probability policyholder incurs a critical illness in that month. [1]

[Max 1]

(iv)

- The sum at risk [½]
- The current bid value of the units of the policy [½]
- Current Age of policyholder [½]
- Gender of policyholder [½]

- Smoking status of policyholder [½]
- Duration in force of policy [½]
- Medical history/ any medical loadings of policyholder [½]
- Margins in the expected morbidity rates [½]
- If charge is fund based, then any factors that will impact unit price [½]
- E.g. investment growth, fund based expenses, other product charges deducted from fund [½]

[Max 2]

(v)

<u>Investment</u>

- Reduction in investment risks as these are largely borne by policyholder. [½]
- …..e.g. asset defaults reflected in unit price and so borne by unit holders [½]
- Although the investment risk has reduced, this is low anyway, so this may not be a significant improvement [½]
- If investment returns were low this may also lead to increased lapses [½]

<u>Operational</u>

- Operational risks increase as new style product wrapper has new processes [½]
- Risks relating to setting up unit funds particularly as the insurer may not have any internal expertise [½]
- Counterparty risks if insurer employs external asset manager [½]
- Needs to have the unit pricing processes in place (no previous experience) [½]
- Unit pricing errors –both financial [½]
- And reputational [½]
- Expense risk likely reduces as the policy fee is reviewable so increase in expenses can be passed on to policyholder [1]
- System risk as unit linked systems very different from traditional non-profit system [½]
- Policy review needs to be in place by the reviewable date(s) [½]
- Increased mis-selling risk as product terms are more complex than traditional non profit product [½]
- Mis-selling risk as distribution channels may not be sufficiently trained to explain the product to potential policyholders adequately [½]
- Regulatory risk if the investment assumptions used for illustration purposes turn out to be too optimistic [½]
- Reserving (e.g. separate projections of unit and non-unit funds, contract boundaries) and capital requirement (e.g. counterparty risks, look-through of unit assets) calculations could be more complex than non-linked contracts [1]

Experience

- Morbidity experience is shared between policyholder and insurer thus reducing the insurer's exposure to morbidity risk [1]
- Pricing risk as this is the first unit linked product [½]
- As morbidity experience is shared between policyholder and insurer, the risk relating to inappropriate / ineffective underwriting is lower [½]
- Lapse risk (in particular around review dates) [½]
- Lapse and re-entry if premiums or terms are more attractive to existing customers [½]
- Low investment returns also lead to the risk that the fund management charge is insufficient to cover the actual investment expenses incurred. [½]
- As the allocation rate is fixed, there may be a risk from early lapses if the initial costs are not covered by the unallocated premium (plus any policy fee). Normally, allocation rates would be lower initially to allow initial expenses to be covered and then increase. [½]
- A risk from lapses if the insurer reviews its morbidity charge and increases it by more than policyholders are willing to tolerate [½]

Development

- Development costs may be much higher than expected [½]
- Literature risk as needs to define terms and conditions that enable the insurer to review the charges and premiums. [1]

Reinsurance

- Reinsurance need to be renegotiated and new reinsurance structures may need to be introduced [½]
- Reinsurance rates may not exactly match reviewable morbidity rates as per the policy [½]

Compliance/Regulatory

- Disclosure risk relating unit prices [½]
- Regulatory risk if regulator imposes maximum level of fund management fee that insurers can charge their policyholders in the future [1]
- PRE/TCF risk as for those who are aware, it may create an expectation of something closer to a stock-market investment and may lead them to expect a surrender value on lapse (something that may not be available on particular products). [½]

Sales/Profitability

- Marketing risk as customers are either not aware of the unit-linked basis or cannot understand the concepts. [½]
- Lower new business volumes if the insurer gets bad publicity from low returns [½]

Other

- Change in tax risk as unit funds may include allowance for policyholder tax. [½]

[Max 8]

[Total 20]

Most candidates scored very well in Q3(i) to Q3(iv) generating a wide range of relevant points. However, on part (ii) only the better candidates mentioned items such as the need to decide on the cancer definition for children's cover, any exclusions and the benefit and term payable.

Q3(v) involving the change in product wrapper was less well answered. There is a wide range of risks that might be impacted. However, whilst many candidates discussed the change in investment risks the possible changes in other risks such as expense risks, operational risks and regulatory risks were generally less well covered. Few candidates mentioned that the morbidity risks would now be shared between eth insured and the policyholder, reducing the insurer's exposure to morbidity risk. The better candidates noted the change to a unit-linked form of product and discussed potential risks arising from this, such as the insurer not having sufficient expertise to do this, the financial and reputational risks of unit pricing errors, the need to have policy review processes in place before the first review date and mis-selling risk arising from more complex product and distributors not understanding the new product sufficiently.

END OF EXAMINERS' REPORT