

Subject SA1

CMP Upgrade 2021/22

CMP Upgrade

This CMP Upgrade lists the changes to the Syllabus objectives, Core Reading and the ActEd material since last year that might realistically affect your chance of success in the exam. It is produced so that you can manually amend your 2021 CMP to make it suitable for study for the 2022 exams. It includes replacement pages and additional pages where appropriate.

Alternatively, you can buy a full set of up-to-date Course Notes / CMP at a significantly reduced price if you have previously bought the full-price Course Notes / CMP in this subject. Please see our 2022 *Student Brochure* for more details.

We only accept the current version of assignments for marking, *ie* those published for the sessions leading to the 2022 exams. If you wish to submit your script for marking but have only an old version, then you can order the current assignments free of charge if you have purchased the same assignments in the same subject in a previous year, and have purchased marking for the 2022 session.

This CMP Upgrade contains:

- all significant changes to the Syllabus objectives and Core Reading
- additional changes to the ActEd Course Notes and Assignments that will make them suitable for study for the 2022 exams.

0 Changes to the Syllabus

This section contains all the *non-trivial* changes to the syllabus objectives.

Objective 1.2 has been amended to read:

- 1.2 Assess the effect of the general business environment on the management of health and care insurers, in terms of:
- underwriting approaches, including genetic testing
 - use of counterparties
 - external influences – demographic, medical, economic, political, social, pandemics and climate change
 - key medical conditions, treatments and other current issues.

Objective 3.1 has been amended to read:

- 3.1 Demonstrate product design and pricing techniques.
- 3.1.1 Describe the requirements for the design of health and care insurance products to be marketed in a particular jurisdiction, including:
- capital requirements and return on capital
 - management of the risks
 - reinsurance
 - investment policy
 - the renewal process and options
 - regulatory requirements
 - environmental, social and governance (ESG) considerations.

1 Changes to the Core Reading and ActEd text

This section contains all the *non-trivial* changes to the Core Reading and ActEd text.

General

In all chapters, the chapter summaries have been amended to make them easier to use for revision purposes given the move to online examinations. These changes have not been included here as the summaries from the 2021 version of the notes remain valid. Where content has changed due to a change in Core Reading, this has been included in the comments on the specific chapter below.

Throughout the text, dates have been amended from May 2020 to May 2021 unless specifically mentioned below.

Chapter 1

Section 4

The link in the first bullet point has been amended to:

<https://www.actuaries.org.uk/studying/curriculum/health-and-care/resources-subject-sa1-health-and-care>

On page 11, the Core Reading list has the following additional points:

- **The Longevity Bulletin published periodically by the IFoA**
- **Output from IFoA working parties**

On page 11, the last link has been amended to:

<https://www.actuaries.org.uk/studying/curriculum/health-and-care/resources-subject-sa1-health-and-care>

On page 12, in Section 4.4, the first bullet point has been deleted.

Chapter 2

Section 2

On page 15, the solution has been amended to read:

Whilst Covid-19 meets the criteria for a disease to be included in a CI policy in that it is perceived to occur frequently, it is not serious in all cases.

If the claim criteria was a positive test, this could lead to a significant number of windfall payments from those who do not have serious consequences of the illness.

Whilst some people will develop serious symptoms and require hospitalisation, many of these will go on to make a full recovery over time. Successful vaccination programmes in many countries are also reducing both the seriousness of illness and the incidence of hospitalisation.

If an individual did not make a full recovery, it may be possible to make a claim under a TPD definition of a critical illness insurance policy.

For those that die from the disease, this would be covered under the death benefit of an accelerated critical illness.

The claim condition could be based around the medical interventions required (eg incubation or ventilation). However, the wording would need to be clear to avoid any ambiguity.

Whilst there is data emerging all the time on this relatively new disease, it could still be difficult to price the policy with confidence, depending on the claim definition.

As such, it is unlikely that Covid-19 will be added explicitly to a CI insurance policy.

Chapter 3

Section 1

On page 5, the following text has been added at the end of the first paragraph of ActEd text:

The new administration has indicated an intention to reintroduce this penalty.

Chapter 4

Section 1

On page 6, the following text has been added at the end of the section:

Some jurisdictions (eg South Africa) have reduced the barriers to entry for new microinsurers. Reduced regulatory requirements, combined with increased use of technology, could potentially make writing microinsurance business attractive for some insurers.

Chapter 5

Section 1

On page 3, the second bullet point in Section 1.2 has been amended to read:

- **Demographic factors – for example in many countries, there is a demographic trend that shows people are living longer, especially with disabilities or chronic conditions, than has historically been the case.**

On page 8, the final sentence on the page has been amended to read:

As mentioned in Chapter 3, these penalties have now effectively been abolished, although the current administration have indicated their intention to reintroduce them.

On page 16, the following paragraph has been added below the bullet point on claims:

An example of this is the use of mobile phone technology for microinsurance to streamline business acquisition and minimise policyholder paperwork, making writing new business to lower income segments of the population more profitable.

On page 20, the following text has been added below the solution:

Mis-selling

- **The use of data science techniques could be used to influence the consumer's behaviour. For example, the use of techniques such as 'nudging' to provide consumers with a light push to buy a health and care product which the consumer does not actually want or need.**

Sections 1.9 and 1.10 have been added from page 22 onwards. Replacement pages are attached.

Summary

On page 43, the following points have been added to the second bullet point list on influences on customer perception of the health insurance industry:

- climate change – wide-ranging impact on health and mortality, physical assets and financial markets
- pandemics – significant threat to health and care insurers.

Chapter 6

Section 0

The fourth paragraph has been amended to read:

Section 4 describes some external influences on health insurance business, including demographic, medical and economic influences, political and social factors, pandemics and climate change.

Section 2

On page 12, the first paragraph of Section 2.3 has been split in to two paragraphs, the first of which now reads:

Genetic tests are used for many purposes and are becoming cheap and available. However, there are issues with respect to how accurate direct to consumer genetic tests are.

Also on page 12, the final paragraph of Core Reading has been amended to read:

A more practical solution would be for the contract terms to exclude all claim conditions that were connected to the genetic circumstances which had been identified. This might work in health and care insurance in situations where the policy proceeds were not required to support a loan. There are potential ethical issues for the insurer to consider if all claim conditions connected to genetic circumstances were excluded. Particularly as some aspects of the consumer's genetic circumstances cannot be changed, whereas other aspects may be more under the consumer's control.

On page 14, the following text has been added below the bullet point list:

In other countries limitations on the use of predictive genetic tests by health and care insurance companies is down to insurers adhering to industry agreed guidelines in that country.

Section 4

On page 20, the following points have been added to the bullet points list at the start of the section:

- pandemics
- climate change.

On page 21, the Core Reading sentence below the bullet point list before the question has been amended to read:

It can also result in an increase in PMI claims as people live longer but possibly with poor health (and increasingly multiple health issues).

On page 24, the first paragraph of Core Reading under the 'PMI' sub-heading has been amended to read:

For PMI, medical technology advances can create newer, more expensive ways of diagnosing and treating a particular medical problem. This increases both costs (since the insurance is written on an indemnity basis) and frequency (as new treatments are covered, often in addition to existing treatments).

Also on page 24, the final paragraph of Core Reading has been amended to read:

In addition, some medical procedures may become more readily available to the general public as they become safer and cheaper.

Sections 4.6 and 4.7 have been added from p32 onwards. Replacement pages are attached.

Section 5

There are have also been a number of changes to the material on p32-35. Replacement pages are attached.

On page 38, the link in the respiratory disease section has been deleted.

Also on p38, the final paragraph of ActEd text has been amended to read:

In some parts of the UK, a minimum unit price for alcohol has been set to try and cut alcohol-related illness. In May 2018, the Alcohol (Minimum Pricing) Act came into force in Scotland that set a minimum unit price of 50p per unit. This means a standard bottle of 13% wine has a minimum price of £5 and a pint of 4% beer £1.15.

Summary

On page 42, the following points have been added to the final bullet point list on external influences:

- pandemics
- climate change – physical, transition and liability risks.

Chapter 8

Section 0

The following point has been added to the bullet point list:

- environmental, social and governance (ESG) considerations

Section 7 on environment, social and governance considerations has been added after p35. The final section on Other Considerations is now Section 8. Replacement pages are attached.

Summary

On page 41, the following text has been added:

Environmental, social and governance (ESG)

- There is increasing integration of ESG considerations in investment practices due to:
 - risk and return
 - the public interest
 - ethical reasons
 - consumer pressure.

Chapter 10

Section 1

On page 4, the final sentence of Core Reading has been amended to read:

In addition to specific insurance regulation there may be additional legislation which will impact health and care insurers – for example in relation to consumer protection, equality and climate change.

The following ActEd text has been added below this:

Consumer protection, equality and climate change legislation are covered further in Sections **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference source not found.** respectively.

Section 3

Section 3.4 has been added to page 20. Replacement pages are attached.

Section 4

On page 22, the final sentence of Core Reading has been amended to read:

The United Kingdom left the European Union on 1 January 2021 without an EU-wide arrangement for the operation and regulation of financial services. Prior to this the United Kingdom was part of the European Union and Solvency II applied to UK insurers. Further discussions will be had between the UK and EU with regards to financial services and at the time of writing (May 2021) there remains considerable uncertainty with regards to the outcome of these talks. It is assumed within this version of the Core Reading that Solvency II continues to apply to UK insurers. Solvency II and its implications for reporting, capital, and risk management are covered in more detail in Chapters 11 and 12.

On page 24, there have been a number of changes to Section 4.6. Replacement pages are attached.

Summary

On page 28, the following point has been added to the summary in the 'Other legislation and guidance' section:

Climate change – Regulators are working on regulations that aim to limit the impact of climate change on financial systems.

On page 29, the content on the South African regime has been amended to read:

- Regulation split between the Prudential Authority and the Financial Sector Conduct Authority.
- The Solvency Assessment Management framework is a risk-based approach to prudential regulation.

Chapter 11

Section 0

The fourth paragraph has been amended to read:

The UK left the EU without an EU-wide agreement over financial services. Therefore, the future of solvency regulations in the UK are still uncertain at the time of writing (May 2021).

Section 4

On page 10, the second paragraph under the 'Equivalence' sub-heading has been amended and a sentence of ActEd text has been added:

Equivalence can be 'full' (granted for an indefinite period), 'temporary' (granted for a limited period ending on 31 December 2020 or on the date on which the prudential regime of the third country is deemed equivalent, whichever is earlier) or 'provisional' (granted for a ten-year period with possible extension for further ten-year periods).

There is an option to extend 'temporary' equivalence for an additional year.

Chapter 12

Questions

On page 33, the 'exam style' icon has been removed from question 12.3.

Chapter 13

Section 1

A new section on the UK has been added as Section 1. A replacement page is attached with the new content.

Section 4

There have been a number of changes in this section. Replacement pages are attached.

Section 7

The second bullet point in the list has been deleted.

Summary

On page 17 the following text has been added:

United Kingdom

- Currently follows the Solvency II regulations of the EU, unclear how this will change following the UK's exit from the EU.

Chapter 14

Section 2

There have been a number of changes on pages 11 to 16. Replacement pages are attached.

Summary

On page 27, the first bullet under the 'IFRS 17 Insurance Contracts' sub-heading has been amended to read:

General Measurement Model (GMM) – which has four building blocks:

Solutions

On page 33, in the third point from the end of the solution, the reference to the Building Block Approach has been amended to the General Measurement Model.

Chapter 21

Section 3

On page 18, Section 3.5 has been largely deleted and replaced by the following text:

There may be regulatory requirements or legal requirements to be met before any insurance business can be transferred to another provider.

For example, the transfer may need to be approved by a court or a regulator.

This is covered in more detail in Chapter 10.

Chapter 24

Section 2

Additional material has been added to Section 2.1. Replacement pages are attached.

Glossary

Section 0

The first paragraph has been amended to read:

This chapter includes the Core Reading definitions with which you need to be familiar. These definitions are shown in a **different typeface** and are an easy target for a short bookwork question. You should not reproduce these word-for-word in the exam, but you must be able to express the ideas with equal precision in your own words.

The following definitions have been added to this chapter:

Co-morbidity

Co-morbidity is where an individual has more than one disease or condition present at the same time. Conditions described as comorbidities are often chronic or long-term

conditions. An example of co-morbidity is that an individual with arthritis could commonly have other chronic conditions such as diabetes or heart disease.

Nudging

A health insurance company can use rewards and non-financial benefits to encourage positive customer behaviour. For example, where a customer can provide evidence that they are taking actions to keep healthy, then the insurer could offer lower premiums or other non-financial benefits, eg a free coffee every month. This can be a win for the individual and health and care insurer.

2 Changes to the X Assignments

Overall

There have been changes to some of the instruction words used for the questions. These are outlined below. Unless otherwise stated, the solution remains unchanged for these changes.

More significant changes are also listed below.

Assignment X1

Question X1.1

In part (i), the instruction word has been amended to 'Outline'.

In part (ii), the instruction word has been amended to 'Describe'.

In part (iii), the question has been amended to read:

(iii) Describe the advantages and disadvantages for the insured of each of these designs (ie pre-funded and immediate needs long-term care). [6]

Question X1.2

In part (i), the instruction word has been amended to 'Outline'.

In part (iii), the instruction word has been amended to 'Outline'.

In part (v), the instruction word has been amended to 'Describe'.

Assignment X2

Question X2.1

In part (ii), the question has been amended to read:

(ii) Compare these two alternative policy designs. [4]

Question X2.2

In part (i), the instruction word has been amended to 'Describe'.

Question X2.3

Part (iii) has been broken in to two questions:

(iii) Explain the assumptions that might be used in pricing a qualifying policy. [7]

(iv) Suggest how the policy might be marketed and administered. [7]

The original part (iv) has been renumbered part (v) and the instruction word amended to 'Discuss'.

Question X2.4

In the second paragraph of the question, the final sentence has been amended to read:

Employers can choose to provide enhanced sick pay benefits.

In part (ii), the instruction word has been amended to 'Comment on'.

In part (iii), the instruction word has been amended to 'Discuss'.

In part (iv), the instruction word has been amended to 'Suggest'.

In part (v), the instruction word has been amended to 'Discuss'.

Solution X2.2

The solution to part (i) has been amended to reflect the change from a knowledge to an application question. Replacement pages are attached.

Solution X2.3

In part (iii), the solution has been amended to reflect the changed structure. Part (iii) has been headed 'Pricing assumptions'. This covers all the points in the 'Pricing assumptions' section of the solution and scores a maximum of 7 marks.

The new part (iv) starts from the 'Sales and distribution' sub-heading on page 9 and is headed 'Marketing and administration'. This covers all the remaining points in the solution and scores a maximum of 7 marks.

Solution X2.4

The wording at the start of the question has been amended to read:

This question covers material related to product design, covered in Chapters 7 and 8. In part (i) you will need to use your knowledge of group IP insurance and apply it to this unusual situation. The later parts of the question will test your higher order skills and your understanding of the situation.

Assignment X3

Question X3.1

The wording at the start of the question has been amended to read:

The supervisory authorities of insurance business are reviewing the regulatory framework for health and care insurance companies and the accounting procedures to apply to these companies in their territory.

In part (iii), the question has been amended to:

- (iii) Describe how the professional guidance issued by the following bodies, in relation to the role of actuaries, is beneficial to health and care insurance companies:

- (a) the Institute and Faculty of Actuaries to its members [7]
- (b) the Financial Reporting Council. [4]

Question X3.2

In part (iv), the instruction word has been amended to 'Outline'.

In part (vii), the question has been amended to read:

- (vii) Outline the steps the management might take to ease this concern, commenting on the suitability of each of the steps. [17]

Solution X3.1

The solution to part (iii) has been amended to reflect the change to the question. Replacement pages are attached.

Assignment X4

Question X4.1

In part (iv), the instruction word has been amended to 'Outline'.

In part (v), the instruction word has been amended to 'State'.

In part (vi), the instruction word has been amended to 'Suggest'.

In part (vii), the instruction word has been amended to 'Discuss'.

Question X4.2

The final sentence of the question has been amended to read:

Outline the points the reinsurer would make in its reply, including alternatives to reinsurance. [12]

Question X4.4

In part (i), the instruction word has been amended to 'Describe'.

In part (ii), the instruction word has been amended to 'Explain'.

Assignment X5

Question X5.1

In part (i), the instruction word has been amended to 'Explain'.

In part (vi), the question has been amended to read:

- (vi) Explain the reasons why the insurer would want to analyse the change in surplus on its income protection insurance business over a year. [3]

Question X5.2

The question has been amended to read:

A large private medical insurance company has approached an actuarial consultancy. The insurer is based in a developed country where healthcare is provided by the State to all citizens, free at the point of use. It is considering an expansion plan to start selling PMI business in an overseas country and considering two possible strategies:

- Strategy 1 – Setting up a brand new company in the overseas country.
 - Strategy 2 – Buying an established private medical insurer within that country.
- (i) Discuss the main advantages and disadvantages to the company of each of these two strategies. [15]
- (ii) Describe the method that would be used to calculate the capital required to set up an insurance company under Strategy 1. [14]
- (iii) Describe the method that would be used to calculate the purchase price of the PMI insurer under Strategy 2. [10]
- (iv) Suggest other factors that should be considered when deciding upon the price to offer under Strategy 2. [6]

Solution X5.1

In part (vi), the solution has been amended to reflect the change to the question. Replacement pages are attached.

Assignment X6**Question X6.2**

There have been a number of changes to the question, including breaking up part (i) in to three parts, and changes to the instruction words in parts (ii) and (iii). Replacement pages are attached.

Solution X6.2

The solution to part (i) has been broken in to three parts. On page 9, the following sub-heading has been added below the heading for part (i):

(a) Low volumes of new business

All the points up to the 'Premium' sub-heading are now the solution to part (a) and worth a maximum of 15 marks.

For parts (b) and (c) some points have been moved in to the relevant part of the question. Replacement pages are attached.

3 Other tuition services

In addition to the CMP you might find the following services helpful with your study.

3.1 Study material

We also offer the following study material in Subject SA1:

- Mock Exam and AMP (Additional Mock Pack).

For further details on ActEd's study materials, please refer to the *2022 Student Brochure*, which is available from the ActEd website at www.ActEd.co.uk.

3.2 Tutorials

We offer the following (face-to-face and/or online) tutorials in Subject SA1:

- a Tutorial (lasting a total of two days)
- a mini-Online Classroom.

For further details on ActEd's tutorials, please refer to our latest *Tuition Bulletin*, which is available from the ActEd website at www.ActEd.co.uk.

3.3 Marking

You can have your attempts at any of our assignments or mock exams marked by ActEd. When marking your scripts, we aim to provide specific advice to improve your chances of success in the exam and to return your scripts as quickly as possible.

For further details on ActEd's marking services, please refer to the *2022 Student Brochure*, which is available from the ActEd website at www.ActEd.co.uk.

3.4 Feedback on the study material

ActEd is always pleased to receive feedback from students about any aspect of our study programmes. Please let us know if you have any specific comments (*eg* about certain sections of the notes or particular questions) or general suggestions about how we can improve the study material. We will incorporate as many of your suggestions as we can when we update the course material each year.

If you have any comments on this course, please send them by email to SA1@bpp.com.

Legacy systems

- **A challenge for companies with large existing legacy business is that there may be barriers to using Data Science techniques efficiently. Particular challenges could be the poor quality of existing data and the high cost of updating legacy computer systems.**

Staff skills

- **A further challenge for insurers is likely to be a difficulty for health and care insurers in attracting staff with the necessary skills to develop and manage complex Data Science related projects.**

The use of large amounts of data can also lead to issues for consumers. For example, if activity levels are used as a rating factor for PMI an individual with low levels of activity may find it hard to obtain insurance. However, there may be reasons for these low levels of activity, for example the individual may do a lot of swimming which is very hard to track using many activity monitors.

Ethical use of Data Science

Innovation in the use of new types of data and Data Science techniques can create the potential for new ethical challenges for consumers, regulators and insurers to consider.

Potential areas of ethical tensions could be around:

- **the collection and use of new types of data**
- **the use of opaque third party data based on algorithms (eg the use of a credit score derived by a third party in the insurer's risk assessment process)**
- **the use of Data Science techniques to influence consumer behaviour.**

Unethical use or even the perception of unethical use of data could significantly weaken consumer trust in a company or even the wider insurance industry.

A further challenge for insurers is that the public's perception is still developing around the use of many aspects of Data Science. What is viewed as 'ethical' now could be deemed as 'not ethical' in the future as public perception develops.

Data Science raises questions over ethics and the public interest. As health and care insurers are able to see risks in finer detail, the level of cross-subsidy between policyholders could decline. This could lead to less healthy policyholders being unable to find health and care insurance at an affordable cost.

This is a particular concern in health and care insurance given the personal sensitive nature of the data the insurers will record. As the Core Reading suggests, views on acceptability of data use can change over time. For example, during the Covid-19 outbreak, many countries have made it compulsory for people to download and use tracking apps. These apps register who the user comes in to contact with. If someone has close contact with another individual who later tests positive for the virus they can be notified easily and can isolate. However, at the time of writing (May 2020) there is some concern about what these apps may be used for in the future that is outside the current intended use.

To help address some of these ethical concerns, the IFoA has issued a guide for ethical Data Science which can be found here:

<https://www.actuaries.org.uk/system/files/field/document/An%20Ethical%20Charter%20for%20Date%20Science%20WEB%20FINAL.PDF>

Regulation

Insurance regulators will expect companies to comply with any existing regulatory and supervisory frameworks with regards to Data Science related work. However the rapid increase in consumer data and continuous evolution in Data Science techniques in insurance create a number of issues for consideration for regulators.

Insurance regulators are unlikely to want to be seen to put in place additional barriers to development which could benefit both insurers and consumers. However, insurance regulators will also want to balance the potential benefits of these developments against the corresponding risk that these benefits fail to materialise or these techniques result in adverse issues for consumers. Examples of which could include reduced access to insurance for certain consumer groups, poor transparency of decisions, poor consumer outcomes, lack of fairness, or unethical practice.

To effectively regulate the use of Data Science techniques insurance regulators will need to understand the techniques being used, how these techniques have been deployed, and the potential benefits and risks.

Currently, under the Solvency II regulations, data risks would be considered within the operational risk component of the SCR calculation. There are also data quality requirements under Pillar 2 that need to be met. Solvency II is considered in more detail in Chapter 11 and 12.

1.9 Climate Change

Whilst the scientific consensus is that climate change associated with global warming is in progress (IPCC, 2014), the scale and timing of its impacts are uncertain.

The IPCC is the Intergovernmental Panel on Climate Change, a United Nations body that was created to provide regular scientific assessments on climate change and its related risks.

The effects of climate change could potentially have a wide-ranging impact on health and mortality, physical assets, and financial markets. The future actions of society in response to climate change, and their ultimate effectiveness in mitigating the impacts of climate change, is also uncertain.

The overall state of understanding of climate change is also changing rapidly. This includes developments in the understanding of climate change impacts for the world as a whole, but also modelling, regulation and best practice governance for financial institutions.

Climate change could have significant implications for health and care insurers, and could impact many different areas of actuarial work including:

- **product design**
- **pricing**
- **reserving**

- **capital management**
- **risk management**
- **investment.**

These impacts are driven by potential changes in:

- mortality and morbidity rates, *eg* due to implications for food and water availability and the spread of diseases
- asset values, *eg* poor performance of equity holdings in companies that have a reliance on fossil fuels
- economic growth rates, thereby influencing the demand for and pricing of insurance products
- the level of uncertainty about future trends and outcomes
- regulation.

Boards of financial institutions will need to consider the potential impact of climate risks more in future business decision making and strategic planning.

Various major international actuarial associations have produced practical guidance for their members about the potential considerations for their members of climate change. An example of this from the IFoA is the release of a Risk Alert on Climate-Related Risks (IFoA, 2017a), which states that:

‘Actuaries should ensure they understand, and are clear in communicating, the extent to which they have taken account of climate-related risks in any relevant decisions, calculations or advice.’

It goes on to state that:

- all institutions should ‘consider the potential implications of climate-related risks on their invested assets’
- insurers should ‘evaluate and manage the impact of changing patterns of temperature and disease on mortality’
- insurance providers may need to make ‘alterations to pricing or other assumptions’ in relation to mortality and morbidity risks.

Climate change is covered further later in the Core Reading (particularly in Chapters 8 and 10).

Chapter 8 looks at the impact of climate change on product design. Chapter 10 covers regulation relating to climate change. Climate change risks are covered further in the next chapter when we consider the impact of external influences on health and care insurers.

1.10 Pandemics

Recently, pandemics have had a significant impact on global health. They can have a significant impact on health and care insurers. This topic is considered further in the next chapter.

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Solution

- More detailed sales procedures to ensure customers fully understand their cover.
 - Greater disclosure requirements, *eg* Key Features Documents, Statements of Best Practice.
 - Generally, more financial awareness among customers, possibly due to there being more articles in the media about personal finance.
 - Potentially more competition, leading to more aggressive marketing, so that consumers are more aware of health insurance products generally.
-

Also, in an increasingly litigious society, policyholders are more likely to dispute claims that are refused.



Question

Outline the influences that may have led to health insurance policyholders being more litigious.

Solution

- Greater media attention being given to consumer issues.
 - The ease with which complaints can be made, *eg* the complaints procedure may be clearly explained in policyholder literature.
 - Increasing activity among law firms to offer legal representation in disputes, *eg* no-win no-fee offers.
 - Increased consumer protection.
 - Awareness of the increasing number of disputed insurance claims being settled
 - Influences from other countries, especially from the USA, where litigation is becoming more and more common.
-

Of course, any influences that are helping to ensure that all valid claims are being paid are to be commended. However, insurers should try to reduce the number of claims that involve disputes.

Although tight policy wording and good sales procedures will help to limit the number of disputed, but invalid, claims being paid, these measures can never be perfect. The insurer must therefore be aware of the risk of increasing numbers of claims being made and paid.

Furthermore, growing client sophistication is likely to be increasingly evidenced by choice of cash over care in order to arrange one's own medical outcome, or of private treatment in preference to State provision where benefits (in the shape of faster treatment, possibly more expert treatment and more comfortable surroundings) are seen as exceeding the costs (premiums).

4.6 Pandemics

At the time of writing (May 2021) the coronavirus pandemic has had a significant impact on the health of the population in many countries and more widely on the global economy. The long-term impacts of the coronavirus pandemic (for example on mortality and morbidity rates) and understanding the reasons for significant differences in experience between countries and different population sub-groups is likely to take some time.

This version of the Core Reading will not go into more detail on the coronavirus pandemic itself.

Globally, the World Health Organisation recognise that infectious disease in the form of a pandemic presents a huge threat to global health.

There have been several significant pandemics in the last two hundred years, mostly from influenza ('flu) viruses. These include the Spanish influenza of 1918-1920 with an estimated worldwide death toll of at least 50 million.

The HIV / AIDS pandemic that was first recognised in the 1980s remains active. Although now better managed through developed drugs, over 30 million have died from AIDS-related illnesses.

At the time of writing (May 2021), global deaths from COVID-19 are around 3.5 million.

The UK national risk register from 2017 considered that emergence of a pandemic influenza and/or a new infectious disease could lead to a civil emergency, and the threat was considered to be equal to or higher than that of extreme weather events. The report also indicated that there was considerable uncertainty about the timing of any event and what it would look like.

The risk of infectious diseases emerging has increased due to the human impact on the environment. For example, both the increased demand for meat due to a rising global population and deforestation leading to more intensive farming put humans and animals in closer contact. This increases the risk of pathogens spreading from animals to humans. Whilst this risk is not new, the probability of a pandemic event occurring in the future has increased.

Pandemics have the potential to materially impact all aspects of a health and care insurer's business.

As well as the clear link with mortality and morbidity rates, there could be significant impacts on:

- economic growth and therefore related factors such as asset values and demand for products
- operational aspects, including staff sickness.

The potential impact of pandemics on health and care insurers is likely to be an important consideration for regulators. In particular, regulators are likely to want to ensure that health and care insurers have sufficient capital to meet policyholder liabilities in the event of a pandemic. Regulators may wish to see health and care insurers carry out stress testing to show that they are resilient to realistic pandemic scenarios.

4.7 Climate change

As a recap on climate change from the previous chapter:

Whilst the scientific consensus is that climate change associated with global warming is in progress (IPCC, 2014), the scale and timing of its impacts are uncertain. The future actions of society in response to climate change, and their ultimate effectiveness in mitigating these impacts, are also unknown.

The effects of climate change could include impacts on health and mortality, physical assets, and financial markets. Therefore climate change could have significant implications for health insurers. In particular climate change could impact different areas of actuarial work including product design, pricing, reserving, risk management and investment.

Key terms in relation to climate risk are explained below.

Climate change risk categories

Climate risks are risks arising from adverse changes in the physical environment and secondary impacts in the economy at a regional or a global scale.

Climate risks for financial companies are categorised into:

- **physical risks**
- **transition risks**
- **liability risks.**

Physical

Physical climate risks are the first-order effects of environmental changes such as greenhouse emissions, pollution and land use. The effects may be chronic, such as global warming and sea level rise, or they may be acute events, such as instances of extreme weather.

Examples of physical climate risks are:

- **higher rates of ill health (morbidity) due to climate change-related rise in wildfires and resulting air pollution, leading to higher health insurance claims**

Greater air pollution can have a significant adverse impact on those with existing respiratory conditions.

- **higher life insurance claims as a climate changed induced rise in heat waves increases mortality/morbidity among elderly populations with pre-existing health conditions or vulnerabilities.**

These excess heat-related deaths principally arise from dehydration and increased cardiovascular strain, so those with heart conditions are particularly at risk. This could lead to early termination of long-term care insurance claims.

- **increased frequency and concentration of extreme weather events and natural disasters, resulting in higher health insurance claims**

As well as claims arising as a direct impact of such events, morbidity and mortality rates tend to be increased for some time afterwards due to the vulnerability of the remaining population, *eg* from loss of housing or water supply.

- **chronic rise in temperatures and humidity are breeding ground for vector-borne diseases, increasing the likelihood and severity of epidemics and pandemics and causing higher health insurance claims**

Vector-borne diseases result from infections transmitted through a living organism, such as mosquitos and ticks. Examples include malaria and dengue fever. Climate change can impact the abundance of the vectors each season and their geographic spread.

- **damage to coastal real estate due to sea level rise, which in turn increases morbidity and mortality claims causing**
- **failure of a crop harvest due to weather, pestilence or soil degradation which in turn increases ill health and leads to an increase in morbidity claims**

Crops can fail for many climate-related reasons, such as an increase in flooding, drought, wildfire, insect damage (*eg* locust swarms) or soil erosion.

- **increased morbidity in an insured population due to global warming or pollution.**

It is possible that some combinations of changes to physical risks could lead to decreases in morbidity and mortality, for example if lifestyle changes in response include a more active way of living.

For example, an increase in global temperatures might allow an increase in physical activity and exercise during the colder months.

There are also operational risk impacts arising from physical climate risks, depending on geographical location. Companies who use a lot of outsourcing, on a global basis, are more exposed to the risk of extreme weather events impacting their operations.

Transition

Transition refers to economic, political and market changes as a result of efforts to mitigate climate change. Climate transition risks are risks arising from such changes.

Examples of climate transition risks are:

- **policy changes designed to reduce fossil fuel consumption (*eg* taxes, subsidies, limitations) resulting in investments in fossil fuels and carbon-intensive industries losing value**

This may have an impact on the investments held by health and care insurance companies.

- **trends in consumer preferences towards ‘greener’ products and companies**
- **undertakings' investments in carbon-intensive industries result in reputational damage, making it difficult to attract and retain customers and staff**
- **technological innovation causing shifts in market supply and demand, eg renewable energy**
- **transition to low-carbon economy reduces demand for life insurance products, eg occupational pension plans, where undertakings' customer base is heavily exposed to conventional carbon-intensive industries.**

From a health and care insurance company's perspective, transition risk principally relates to:

- changes in the values of assets held, eg equity holdings in companies with a significant dependency on fossil fuels / carbon consumption, due to:
 - the direct impact on the underlying entities of policy changes
 - a shift in market sentiment towards sustainability
- changes in demand for certain health and care insurance products
- adaptation of operational models.

Liability

Climate liability risks can arise from injured parties seeking compensation for the impacts of climate change. These impacts may be the first-order physical impacts related to climate change, or the second-order transition impacts.

Examples of climate liability risks are:

- **new links are established between air pollution and adverse health conditions, resulting in a new class of latent claims**
- **undertakings that do not take into account the impact of their investment decisions on climate change experience direct claims for damages and litigation costs**

These liability risks principally impact general insurers, in terms of the potential for higher claims arising from the liability insurance business that they sell.

However, health and care insurance companies would also be exposed in terms of:

- the impact on the market values of assets held in affected companies
- counterparty risks arising from any relationships with affected companies
- reputational risk resulting from poor investment decisions.

5 Key medical conditions

This section considers the key medical conditions that affect mortality and morbidity rates in various countries of the world. It then goes on to consider these conditions in more detail, in particular looking at the current issues affecting them.

5.1 Key medical conditions affecting mortality and morbidity

The main causes of mortality and morbidity, and any specific diseases in a jurisdiction may impact any health and care business written by an insurer. The following section looks at this in more detail.

Mortality

The drivers of mortality experience can be complex and can vary significantly over time and by population.

Of the 55.4 million deaths worldwide in 2019, more than half (55%) were due to the top ten causes. Heart disease and stroke are the world's biggest killers, accounting for a combined 15 million deaths in 2019. These diseases have remained the leading causes of death globally in the last 20 years. Heart disease alone was responsible for 16% of the world's total deaths in 2019.

Heart disease includes angina, myocardial infarction (heart attack) and sudden cardiac death.

Chronic obstructive pulmonary disease claimed 3.3 million lives in 2019, while lung cancer caused 1.8 million deaths making it the 6th leading cause of death globally.

Diabetes killed 1.7 million people in 2019. However, in reality this is likely to be much higher. There are challenges in recording diabetes as a cause of death, and in addition, the true prevalence of type 2 diabetes is not clear due to a significant proportion being undiagnosed.

Deaths due to dementia more than doubled between 2000 and 2019, making it the 7th leading cause of global deaths in 2019.

Lower respiratory infections caused 2.6 million deaths worldwide in 2019, representing a steady reduction since 2000. The death rate from diarrheal diseases fell from 2.6 million in 2000 to 1.5 million in 2019. Tuberculosis is no longer in the global top 10, falling to thirteenth in 2019 with a 30% reduction in global deaths. Similarly, HIV/AIDS is no longer among the world's top 10 causes of death, deaths from this cause have fallen by 51% in the last 20 years.

Kidney disease is now the 10th leading cause of death globally. Mortality has increased from 813,000 in 2000 to 1.3 million in 2019. Kidney disease is one of the main complications that arise from poorly controlled diabetes.

Local factors mean that the main causes of death can vary significantly between jurisdictions.

People living in a low-income country are far more likely to die of a communicable disease than a non-communicable disease. However, causes of death from non-communicable disease are increasing, and those from non-communicable diseases decreasing in low-income countries.

Non-communicable diseases (NCDs) caused 70% of deaths globally, ranging from 40% in low-income countries to 88% in high-income countries. All but one of the ten leading causes of death in high-income countries, lower respiratory infections, were NCDs.

In terms of absolute number of deaths, however, 78% of global NCD deaths occurred in low- and middle-income countries.

Low-income countries had the highest mortality rate due to road traffic injuries. Road injuries were also among the leading ten causes of death in both lower-middle- and upper-middle-income countries.

Globally, life expectancy has increased by more than six years between 2000 and 2019 – from 66.8 years in 2000 to 73.4 years in 2019.

Sources:

WHO - The top 10 causes of death Factsheet, (December 2020),
<https://www.who.int/en/news-room/fact-sheets/detail/the-top-10-causes-of-death>

WHO – The Global Health Observatory – Life expectancy and healthy life expectancy 2019,
<https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/gho-life-expectancy-and-healthy-life-expectancy>

In the UK, there is some evidence of improvements in life expectancy over time. This is mainly because of falls in the death rate from coronary heart disease, lung disease, and some cancers. However, mortality experience can vary not only between jurisdictions but also within regions of a jurisdiction. For example, whilst overall life expectancy has improved in the UK, there remain significant regional differences in levels of health within the UK.

Further discussion of the main causes of death (and ill health) is given in Section 5.2 below.

For example, the Global Burden of Disease 2013 study (published by Public Health England) showed that between 1990 and 2013, life expectancy in England saw one of the biggest increases in life expectancy among major developed countries – a 5.4 year increase from 75.9 years in 1990 to 81.3 years in 2013. Although there were improvements in most diseases in the UK, there were increases in deaths due to liver cancer and cirrhosis of the liver over this period.

Over the same time period, Turkey also saw a significant increase in life expectancy of 9.1 years from 67 years to 76 years, predominantly due to reduced deaths from cardiovascular diseases. Not all countries saw an improvement over this period though. For example, South Africa's life expectancy reduced by 4.1 years from 65 years to 60 years largely due to increased deaths from HIV / AIDS and tuberculosis.

Morbidity

The drivers of morbidity are similarly complex, with significant differences by region and jurisdiction. The following table illustrates the top five causes of disability adjusted life years lost (DALY's / 100,000) in 2019 globally and by income region, with the UK added for comparison.

Note in the table below, the term 'Neoplasms' is used as an umbrella term for all malignant cancers.

Leading causes of disability, countries grouped by income, 2019:

Rank 2019	World	Low Income	Middle Income	High-middle Income	High Income	UK
1	Cardio-vascular	Maternal & neonatal	Cardio-vascular	Cardio-vascular	Neoplasms	Neoplasms
2	Neoplasms	Respiratory infections and TB	Neoplasms	Neoplasms	Cardio-vascular	Cardio-vascular
3	Maternal & neonatal	Enteric infections	Musculo-skeletal	Musculo-skeletal	Musculo-skeletal	Musculo-skeletal
4	Other non-communicable	NTD's & malaria	Diabetes & CKD	Mental disorders	Mental disorders	Mental disorders
5	Respiratory infections and TB	Other non-communicable	Other non-communicable	Other non-communicable	Neurological	Neurological

Source: *Global Burden of Disease Compare Visualisation Tool*, <https://vizhub.healthdata.org/gbd-compare/>.

Differences by region are covered in more detail in Section 5.3 below.

The most significant causes of ill health have remained largely unchanged in the UK over the past 25 years.

This data was collected before the Covid-19 pandemic. Initial data on the impact of Covid-19 on global deaths over the first year of the pandemic suggest it would be the 4th largest cause of deaths. The impact would vary significantly by country.

There are some similarities between the main causes of death and ill health. For example strokes are the third leading cause of death in England each year and the leading cause of disability.

Whilst life expectancies have increased in recent years in the UK, this has not been matched by improvements in levels of ill health from causes such as low back and neck pain, heart disease and strokes. For several conditions, the overall demands on the health services in the UK are increasing despite the death rate falling. In other words, people in the UK are living longer but spending more years in poor health.

To allow for this, *healthy* life expectancy can be considered rather than pure life expectancy. The healthy life expectancy for a male born in England from 2012-14 was 63.4 years compared to a total life expectancy of 79.5 years. This suggests that these men might expect to spend on average 16.1 years in ill health. The comparable figure for females is 19.2 years, so while females have a longer life expectancy, they can expect to spend more of it in ill health.

A similar measure is disability-free life expectancy. However, neither measure really allows for the *quality of life* that is experienced during the period of ill health.

Longer life expectancy and poorer health could have considerable implications for the overall population of a country. For example, there may be significant implications for individuals and local authorities in funding the costs of long-term care. A challenge for health and care insurers in the future will be to come up with innovative products that will help individuals to pay for their long-term care, at acceptable cost to the individual.

Some of the pressures being placed on long-term care insurers were considered in Chapter 2. Along with designing products that are able to meet customers' needs in terms of costs, insurers also need to try to identify customers who may be at higher risk of needing care.

One potential way to consider the progression of disability which is often quite predictable, is to consider instrumental ADLs (IADLs). These are activities that are not necessary for fundamental functioning, but they let an individual live independently in a community. Examples include shopping, doing laundry, cooking a hot meal and they can be used as early indicators of problems that may arise in the future. Individuals typically fail IADLs before the standard ADLs.

Thankfully for insurers (and most of us!) most of old age isn't spent being dependent on care, and where care is needed, unless 24 hour care is required, most of it is provided in the home by the spouse or children. Again, this poses more issues regarding the design of products to allow the variety of care needs that policyholders may require. The availability of a viable pre-funded insurance option could also change the provision of care.

Changes in longevity and morbidity rates may make an insurer's historic data less credible. An insurer may therefore need to access more / better data to properly price and reserve for its risks.



Question

Explain how an insurer could access more / better data in this situation.

Solution

It could seek expert advice from professional bodies, such as the IFoA, who may have carried out data and modelling work on trends as they have been identified. External consultancies may also be able to provide assistance. Reinsurers may offer more data but whether it is *better* would need to be assessed as it will relate to the same historic period as the insurer's own data.

Data from other countries is an alternative in this situation but great care would need to be taken when considering any demographic trends that have occurred in other countries and assessing whether the underlying causes are the same as in the insurer's own country.

For long-term care insurance products, it may also be particularly difficult to gather *additional* data given the lack of available data irrespective of any change in rate. For example, LTCI is not widely sold in the UK so there is a general lack of both industry and reinsurance data.

The insurer may need to consider different sources of data (such as published research from cohort studies, talking to medical experts, big data, wearable technology etc).

With respect to the use of wearable technology that was discussed in Chapter 5, improved data will provide the basis for a more structured approach to determining the discount schemes for using the wearable technology. To this end, a number of insurers are looking to use more accurate wearable devices to provide a better understanding of an individual's health and the correlations between the health readings and the impact on mortality or morbidity. There are a number of companies seeking to create more accurate models and build correlations between wearable data and health outcomes.

Data science was also considered in Chapter 5.

One of the limitations of wearable technology has been the need for some element of self-reporting by policyholders, leading a risk of mis-reporting the information. As discussed in Chapter 5, the data can also be misleading if not all activity is recorded accurately.

5.2 Specific diseases

Heart disease

The main risk factors for heart disease are:

- **smoking**
- **being overweight**
- **having high blood pressure.**

There are many other risk factors for heart disease such as:

- high blood cholesterol
- being physically inactive
- having diabetes
- a family history of heart disease
- ethnic background
- age and gender.

Cancer

Cancer, in its various forms, has become common in developed countries. Survival rates of cancer have been improving in many developed countries, particularly in respect of the most common cancers. For example more men are now surviving prostate and bowel cancer and more women are surviving breast cancer.

For example, in the UK, the 10-year survival rate for prostate cancer was around 25% in 1971-72 but by 2010-11 it was 84%. For breast cancer in women, the 10-year survival rate increased from around 40% in 1971-72 to 78% in 2010-11.

Unhealthy lifestyles are a significant contributing factor, for example it has been estimated that about a third of cancers are caused by smoking, diet, alcohol and obesity. In addition, many cancers are detected too late, despite there being national screening programmes for certain cancers.

The UK currently has three screening programmes: for bowel cancer in men and women and breast and cervical cancers in women. There is a test available for prostate cancer but it is not yet reliable enough to use on a large scale.

Public awareness of symptoms and the need to seek help early is still too low in many countries.

One of the issues with many types of cancer is that early symptoms are often quite generic and are more likely to be caused by something much less serious. For example, two symptoms of bowel cancer are abdominal pain and a change in normal bowel habits, however these are also symptoms of irritable bowel syndrome. So, patients may not seek medical advice for these symptoms, or medical professionals will seek to eliminate other more common causes first, delaying diagnosis.

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7 Environmental, social and governance (ESG) considerations

As consumers become more aware of their personal responsibility towards climate change and sustainability, they will search for products designed with such factors in mind. It is increasingly common for policyholders to incorporate environmental, social and governance (ESG) considerations into their investment practices and product choices.

A very wide range of investment considerations is included within the scope of ESG.

Examples of ESG factors include:

- **environmental (climate change, resource depletion, waste...)**
- **social (human rights, modern slavery, working conditions...)**
- **governance (bribery and corruption, executive pay, board diversity and structure...)**

There are of course many ESG implications for the operations of a health and care insurance company.

Focussing here on product design and pricing, the main issues to consider will be:

- offering appropriate fund choices for unit-linked products
- implications for the marketability of products more widely if the company is perceived not to be meeting standards, *eg*:
 - not reflecting ESG in investment choices for assets that back non-linked contracts
 - not promoting healthy working practices or embracing diversity
 - inadequate ESG credentials of suppliers.

Although these latter points are less accessible to potential customers, there is a trend towards greater public accountability on such aspects.

There is increasing integration of Environmental, Social and Governance considerations (ESG) in investment practices within insurance companies, due to reasons of risk and return and the public interest as well as the more traditional ethical reasons.

As well as the potential upside from higher product sales, taking into consideration ESG factors as part of investment strategy can lead to better investment performance. For example, investment in green technology may be an area of significant growth potential.

One important factor for companies to consider in relation to product design and pricing in particular, is sustainable investment options. Sustainable investment refers to investment approaches which take account of Environmental, Social and Governance (ESG) issues in a way that is consistent with the long-term sustainability of society and the natural environment. This is relevant when investment is motivated by financial objectives having regard to long-term sustainability.

Examples of sustainable investments would be:

- **investments in green energy companies eg solar, wind, water energy**
- **avoidance of investments within fossil fuels industry eg oil, coal**
- **investments in issued green bonds**
- **investments in companies targeting a zero emissions policy**
- **investments in fair-trade companies.**

Detailed information would have to be provided to potential customers, to give them reassurance that ESG standards are being met within the investments held.

Investors and policyholders increasingly analyse such non-financial information about a product when evaluating whether to purchase it or not.

Investment departments have to perform thorough research on the assets and their issuers, in order to screen their investment choices appropriately. They may also be required to engage proactively with the companies in which they have invested, to demonstrate that they are using their voting rights to encourage positive ESG practices. Together with the need for detailed customer information, this can increase costs – which would have to be passed on to policyholders in the product pricing or fund charges for unit-linked products.

Products should be designed in line with the objectives of the UN Sustainable Development Goals and Principles for Responsible Investment.

The Sustainable Development Goals were developed with the aim of promoting global prosperity (ending poverty and building economic growth) whilst protecting the environment. The 17 goals include quality education; gender equality; industry, innovation and infrastructure; climate action; peace, justice and strong institutions; partnership.

More information can be found at: www.un.org/sustainabledevelopment.

The UN Principles for Responsible Investment (PRI) is an international organisation that is dedicated to promoting environmental and social responsibility amongst investors.

Its members comprise financial institutions who commit to the following six principles:

- incorporating ESG issues into their investment analysis and decision-making processes
- being active owners and incorporating ESG issues into their ownership policies and practices
- seeking appropriate disclosure on ESG issues by the entities in which they invest
- promoting acceptance and implementation of the principles within the investment industry
- working together to enhance effectiveness in implementing the principles
- reporting on activities and progress towards implementing the principles.

More information can be found at www.unpri.org.

There has been concern in the UK insurance industry that future legislation might make it unlawful to charge different premiums to different age groups, particularly following the Court of Justice of the European Union ruling on gender equality (see below). The insurance industry have argued that a restriction on the use of age as a rating factor would be 'unnecessary, unfair and restrictive'.

Age limits are permitted where they are relevant to risks or costs, and providers may have to refer declined customers to another provider through a signposting system. There is also a requirement for insurers to make data on some products available at industry level. Differences in treatment which result from costs related to pregnancy or maternity are unlawful.

Disability

In the UK, the insurance industry has not been allowed to differentiate on the basis of disability for a number of years. An individual is regarded as disabled if:

- they have a physical or mental impairment, and
- the impairment has a substantial and long-term adverse effect on their ability to carry out normal day-to-day activities

People with HIV, cancer, multiple sclerosis and some visual impairments are also protected under UK equality legislation.

If an insurer wishes to decline or impose special terms on a health and care or health insurance policy for a disabled person, it is lawful to do so provided the adverse decision is based upon information or data that is relevant to the assessment of the risk to be insured. It is also lawful if it is from a source upon which it is reasonable to rely, and provided the decision is reasonable having regard to the information or data relied upon and any other relevant factors.

So special terms can be imposed on disabled people as long as there is adequate evidence that this is 'fair'. This illustrates the importance of obtaining sufficient relevant and accurate data, not just for pricing, but for making good underwriting decisions and justifying them.

Gender

It is possible that where a country is part of a wider economic block that supra-national regulations may apply to countries within that block. For example the EU Gender Directive applies to countries in the European Union. The EU Gender Directive was aimed at 'implementing the principle of equal treatment between men and women in the access to and supply of goods and services'. Initially there was an opt-out in respect of financial and insurance products provided that certain conditions were met. However following a decision from the Court of Justice of the European Union this was removed with effect from 21 December 2012. From that point onwards, insurance companies have no longer been able to use gender as a rating factor for new business.

Reviewable premiums are not treated as new business for the purpose of this legislation. However, insurance companies do need to be careful to avoid the use of proxy rating factors (ie highly correlated to gender) that might be deemed to be indirect discrimination and thus also not permitted.

Clearly, the inability to differentiate between gender when setting premium rates has significant implications for insurance pricing, particularly for annuities and protection products where there are material observed differences between mortality (and morbidity) experience according to gender. Rather than simply 'averaging' premium rates, additional contingency loadings are needed for the risk of business mix by gender not being as expected within the unisex pricing.

A particular difficulty in estimating the gender mix is that it is likely to vary within a single product, eg the proportion of males may be higher at higher sums assured.

It should also be noted that in some areas there was already a requirement to offer unisex premium rates, for example for annuities with protected rights.

3.4 Climate change

There is widespread concern among policymakers and financial regulators of the damage that climate change could cause to the financial system and, conversely, the role that the financial system can play in achieving an orderly transition to a low carbon economy.

In order to limit the impact of climate change on financial systems, many regulators are working on regulations whose aims include ensuring that financial institutions:

- consider climate risks in business decision making and strategic planning
- effectively disclose and report on climate-related risks and opportunities
- adopt a consistent and reliable means of assessing, pricing, and managing climate-related risks
- incorporate environmental, social and governance (ESG) factors into investment management decisions
- incorporate financial risks from climate change into existing risk management processes.
- use scenario analysis to inform risk identification and to estimate the impact of financial risks arising from climate change.
- consider the impact of climate risks on ability to meet obligations towards policyholders and other key stakeholders.

Some regulators have issued guidance on the topic of insurers approaches to understanding and managing the financial risks from climate change. For example, in the UK climate change was included as a scenario in the PRA's Insurance Stress Test 2019. In this exploratory exercise, the PRA proposed climate change scenarios involving both physical and transition channels, including shocks to asset values varying by sector. Firms were invited to share the assumptions and parameters derived internally when assessing the likely impacts on climate change.

Chapter 6 gives further details about how climate change risk can be categorised into physical, transition and liability risks.

4.3 United States

The United States is also a large sophisticated insurance market and takes a different approach to insurance regulation relative to the United Kingdom.

In the United States, each individual state has its own insurance regulator, which supervises insurance companies domiciled in that state. The work of the individual state regulators is coordinated through the National Association of Insurance Commissioners (NAIC). The NAIC provides guidance on the standards which apply to each state. Although the NAIC does not have any power to enforce changes on each state, it sets out model laws for regulation which has supported significant uniformity of reporting, valuation and capital requirements across each state.

There are also roles for two federal entities involved in insurance regulation:

- The Federal Insurance Office (exists within the US department of Treasury) which monitors all aspects of the insurance sector and advises on important international and national insurance matters. It does not have a supervisory role.
- The Federal Reserve Board which has consolidated oversight of insurance companies deemed as systematically important.

The US regulatory, legal and tax and framework has generally led to a preference for the use of prescriptive rules and regulations combined with overall asset adequacy analysis, with relatively recent inclusion of certain principles-based requirements. This is covered in more detail in Chapter 13.

4.4 China

Whilst China has a large insurance market there are considerable differences to the United Kingdom and the United States. The insurance industry in China only reopened in the 1980s and has experienced significantly higher growth than most western countries since then.

The China Banking and Insurance Regulatory Commission (CBIRC) was established in April 2018 by a merger of China's banking and insurance regulators, namely, the China Banking Regulatory Commission (CBRC) and China Insurance Regulatory Commission (CIRC). The CBIRC is responsible for supervising the establishment and ongoing business activities of banking and insurance institutions. It is also responsible for taking enforcement actions against regulatory violations.

The CBIRC has implemented significant changes to its capital requirements, risk management and transparency disclosures through the introduction of its C-ROSS framework. The C-ROSS framework has similarities to Solvency II, although the C-ROSS framework is also intended to reflect the specific circumstances of the Chinese insurance market, rather than be a direct copy of Solvency II. This is discussed in more detail in Chapter 13.

4.5 Australia

Australia has a large developed financial services market. The Australian Prudential Regulation Authority (APRA) is the prudential regulator of the Australian financial services industry. It oversees a range of financial institutions including banks, building societies, general insurance, reinsurance companies, life insurance, private health insurance, and most of the superannuation industry.

Superannuation is the term used for company provided pensions in Australia.

APRA is funded largely by the industries that it supervises. It was established on 1 July 1998. As at 30 June 2017, APRA supervised financial institutions holding \$6.1 trillion in assets.

APRA's mission is 'to establish and enforce prudential standards and practices designed to ensure that, under all reasonable circumstances, financial promises made by institutions we supervise are met within a stable, efficient and competitive financial system'.

The APRA takes a risk-based approach to supervision that is designed to identify and assess those areas of greatest risk to a regulated entity (or to the financial system as a whole) and then apply its supervisory resources and attention to these risks in a targeted and cost effective manner.

Limitations were identified with regards to the extent that Australia's regulatory regime allowed for risk-based capital, risk management and disclosure requirements. Therefore the APRA developed the Life and General Insurance Capital (LAGIC) standards. LAGIC has strong parallels to Solvency II and also follows a similar three pillar structure to Solvency II. LAGIC was implemented on 1 January 2013. The LAGIC framework is covered in more detail in Chapter 13.

4.6 South Africa

South Africa has a large developed financial services market.

Up until 1 April 2018 the Financial Services Board (FSB) was an independent body responsible for regulating the (non-banking) financial services industry in South Africa.

Following the global financial crisis the FSB launched a project to establish a risk-based solvency framework for the prudential regulation of life and non-life insurers in South Africa. This framework is referred to as the Solvency Assessment and Management ('SAM') framework. The SAM framework is covered in more detail in Chapter 13.

The SAM framework was implemented as at 1 July 2018.

In addition to the changes in solvency framework the SAM reforms are part of a comprehensive overhaul of the existing financial sector legislation in South Africa. These broader reforms arise from the shift to a 'Twin Peaks' model of financial regulation in South Africa.

This is a similar model to that outlined above for the UK.

This saw the establishment of a dedicated prudential regulatory authority (the Prudential Authority) in the South African Reserve Bank, and a conduct regulator.

From 1st April 2018 the FSB was split into a prudential regulator (Prudential Authority) and a conduct regulator (Financial Sector Conduct Authority):

- **The Prudential Authority (PA) is responsible for regulating a wide range of financial institutions including banks, insurance companies, financial conglomerates and financial market infrastructure. The PA functions include licensing, ongoing supervision and enforcement.**

- **The Financial Sector Conduct Authority is responsible for market conduct regulation and supervision. It aims to enhance the efficiency and integrity of financial markets; promote fair customer treatment by financial institutions; provide financial education and promote financial literacy; and assist in maintaining financial stability.**

So, one regulator takes responsibility for prudential regulation (the PRA in the UK, the Prudential Authority in South Africa) and another for market conduct (the FCA in the UK, the FSCA in South Africa).

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

1 United Kingdom

1.1 Overview

As outlined in Chapter 10, the United Kingdom left the European Union on 1 January 2021 without an EU-wide arrangement for the operation and regulation of financial services. Further discussions will be had between the UK and EU with regards to financial services and at the time of writing (May 2021) there remains considerable uncertainty with regards to the outcome of these talks.

Prior to exit, the United Kingdom was part of the European Union and Solvency II applied to UK insurers. At the point of exit the UK was aligned with Solvency II regulations.

The Solvency II regulations are described in Chapters 11 and 12.

It is unclear the extent to which this alignment will continue in the future. Over time it is possible there could be a divergence in regulations between the UK. With either the UK actively changing their own rules to be different to the EU, or the EU changing their own rules and the UK choosing not to make the same changes.

Immediately following the UK's exit, UK based insurance companies will no longer be able to provide services in the EU and will become a third-country insurance undertaking.

Third country equivalence is discussed in Chapter 11.

These issues are not considered further in this version of the Core Reading but this section will be amended in the future.

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4 South Africa

4.1 Introduction

The approach to regulation in South Africa was outlined in Chapter 10.



Question

Explain briefly the approach to regulation in South Africa.

Solution

The Prudential Authority (PA) is responsible for regulating a wide range of financial institutions including banks and insurance companies. The PA functions include licensing, ongoing supervision and enforcement.

The Financial Sector Conduct Authority (FSCA) is responsible for market conduct regulation and supervision. It aims to enhance the efficiency and integrity of financial markets; promote fair customer treatment by financial institutions; provide financial education and promote financial literacy; and assist in maintaining financial stability.

A recent introduction has been a risk-based solvency framework for prudential regulation of insurers referred to as the Solvency Assessment and Management (SAM) framework.

4.2 Solvency Assessment and Management framework

As discussed in Chapter 10, the Prudential Authority in South Africa implemented a risk-based solvency framework for the prudential regulation of life and non-life insurers in South Africa in July 2018. This framework is referred to as the Solvency Assessment and Management ('SAM') framework.

The SAM framework is largely based on Solvency II, and has a three pillar structure:

- 1. Pillar 1 sets out the quantitative regulatory requirements that insurers need to comply with. Pillar 1 requires insurers to determine their balance sheet and capital requirements on a SAM basis, which are used to determine their financial soundness from a regulatory perspective. The main regulatory capital requirement under SAM reflects the amount of Own Funds that a company requires to survive a 1-in-200 year loss event.**

This is similar to the SCR under Solvency II.

- 2. Pillar 2 deals with the qualitative requirements and rules on supervision of insurers. It aims to establish a system of sound governance and risk management.**

- 3. Pillar 3 sets out the regulatory reporting and public disclosures required by insurers. Insurers will have to disclose private information to the Prudential Authority and public information to the market.**

Insurers may use the Standardised Formula to calculate the capital requirements, or may apply to the local regulator for approval to calculate the capital requirements using an Internal Model.

A guiding principle from the start of the SAM development process was that SAM should comply with the criteria for Solvency II third-country equivalence.

Whilst the starting point for SAM was Solvency II, SAM has been adapted for features unique to the South African market and economic environment. Examples of where adaptations have been made to reflect the South African environment include using risk free rates to reflect the South African context, and calibrating certain risks such as market risk to the South African market environment. As a result of these adaptations, there are some differences between SAM and Solvency II.

A further example of adapting capital requirements to the local environment is the treatment of microinsurance in South Africa. In order to encourage wider access to insurance for people on low incomes, South Africa has reduced the minimum capital requirement for new microinsurers relative to the SAM SCR requirement.

2.4 Accounting for insurance contracts – IFRS 17

Overview

IFRS 17 was issued in May 2017 with the final amendments to the standard being completed in June 2020. It will take effect from 1 January 2023. Early adoption is permitted in some circumstances. The standard is much more prescriptive than IFRS 4 and its adoption will lead to a substantial change to financial disclosures and the systems and processes that produce them.

Both Solvency II and IFRS 17 are moves towards more market-consistent valuations. One result of these developments is that in future the difference between solvency reporting and accounting value reporting in the EU will be much smaller than in the past. As will be seen in Section 4, developments in supplementary (EV) reporting have also been moving in this same general direction.

The main criticisms of IFRS 4 concerned:

- the sensitivity of profits to reserving assumptions
- the lack of comparability of different health and care insurance companies
- the early recognition of premiums and profits for long-term contracts.

IFRS 17 addresses each of these criticisms.

IFRS 17 measurement models

The standard describes three valuation methods:

- The *General Measurement Model (GMM)*. The GMM (also referred to as the *Building Block Approach (BBA)*) is described below.
- The *Variable Fee Approach (VFA)* may be adopted where a significant proportion of the cashflows vary in line with the value of a clearly defined pool of assets. This method is mandatory for contracts with direct participation features. For example for unit-linked contracts and contracts with ‘discretionary participating features’ (DPF) (ie with-profits). The VFA is discussed later in this section.
- The *Premium Allocation Approach (PAA)* is a simplified model that is similar to the unearned premium method used by general insurers. Like general insurers, health and care insurers may consider the Premium Allocation Approach for very short-term health and care business.

The Premium Allocation Approach is not considered further in this subject.

GMM

The GMM defines how the initial measurement of the assets and liabilities of an insurance contract should be recognised and re-measured over time. It defines how the revenue and profit of a contract is realised over the life of the contract. The GMM is the default valuation methodology for any insurance contract under IFRS 17. This method is likely to be appropriate for traditional long-term life business such as term assurance and without-profit annuities.

The GMM has four building blocks:

- the fulfilment cashflows
- the time value of money
- the risk adjustment (RA)
- the contractual service margin (CSM).

The four building blocks may look odd to actuaries used to producing regulatory balance sheets, but if we merge the first two building blocks and call it the best estimate liability (BEL), it should look more familiar. The following describes the three monetary values: BEL, RA and CSM.

Best estimate liability (BEL)

The methodology for calculating the BEL is similar to that required by Solvency II:

- derive best estimate assumptions
- derive a discount rate from observable market data
- discount the projected cashflows
- allow for the cost of any guarantees.

The actual IFRS value may differ from those calculated for Solvency II for a few reasons concerning the unbundling of contracts and the offsetting of profitable and unprofitable contracts, which will be discussed below.

Risk adjustment (RA)

The RA is similar to the Solvency II risk margin, representing the value of the guarantees not captured in the BEL (*ie* the non-market risks). The RA may be calculated in one of three ways:

- Value-at-Risk (VaR)
- conditional tail expectation (CTE)
- cost of capital (CoC).

IFRS 17 does not specify the confidence level at which the RA should be set – this is at the choice of the insurer.

Note: The RA calculation is likely to be calculated allowing for diversification of risk factors, but the RA must be attributed to individual contracts.

Contractual service margin (CSM)

The CSM is a new concept. At inception, the CSM is set equal to what would otherwise have been considered the day one profit, *ie* the initial premium, less the attributable initial expenses, less the BEL, and less the RA.

The initial CSM is set at inception ('day one', *ie* the point at which the policy is written) for each policy (or group of homogeneous policies), so that the total initial liability of BEL + RA + CSM equals the initial net cashflow of initial premium minus initial expenses. This means that zero profit arises at the point at which the policy is sold. Thus:

$$\text{CSM} = (\text{Initial premium} - \text{Initial expenses}) - (\text{BEL} + \text{RA}).$$

However, the CSM cannot be negative, either at issue or subsequently. Therefore, if BEL + RA exceeds the initial net cashflow, a loss would be recognised immediately.

For a contract that has been written to generate profit, as would normally be the case, the CSM would be greater than zero – provided the risk adjustment (RA) is not too onerous.



Question

Explain why the CSM would be expected to be positive for a profitable regular premium contract, despite initial expenses being likely to exceed the initial premium.

Solution

The CSM would likely be positive for such a contract because the BEL would be negative. This is because the value of future premiums deducted from the BEL would be expected to exceed the value of future benefits and expenses, due to the loadings in those premiums to recover initial expenses and to provide profit margin.

As long as the RA is smaller than the discounted value of all profit loadings, the CSM would be positive.

The CSM may be thought of as 'future profit' or 'unearned profit'. This is a key feature of IFRS 17 reporting – the CSM is released (*ie* profit emerges) over the term of the policy.

The initial CSM is written down (*ie* gradually reduced) over the term of the contract. This write-down is done in line with a chosen 'coverage unit' measure, such as the number of policies in-force. Contracts can be grouped, but have to remain in annual cohorts (*ie* policies written more than one year apart cannot be grouped together).

The release of CSM at each accounting date contributes to profit for that period. Doing this allows the profit loadings to emerge steadily over the policy term, thus smoothing or stabilising reported profit.

The fact that the CSM is set at policy inception and then written down in a defined pattern presents practical issues for insurers in relation to the implementation of IFRS 17. It is necessary to look back through historical data for policies in-force at the January 2023 implementation date to determine what the initial CSM would have been for each, and how it would have been written down. There are challenges for insurers in terms of capturing the appropriate historical data and performing these retrospective calculations.

Another feature of the CSM is that it offsets the change in value of the BEL and RA due to assumption changes, which means the profit reported in a given year will be affected more by actual experience and less by assumption changes.

In other words, if changes are made to non-investment assumptions (*eg* morbidity rates), the CSM is adjusted to offset any resultant change in the BEL and RA. The total liability remains unaffected by the assumption change, and this also contributes to the smoothing of profit emergence. However, if the CSM is not large enough to absorb an increase in BEL and RA, the shortfall will be recognised immediately as a loss.

Another IFRS principle is that profitable and unprofitable contracts should not be offset. Under IFRS 17, each policy should be categorised as one of:

- **loss-making at inception**
- **profitable with no significant risk of making a loss**
- **any other profitable contracts.**

The last categorisation is referring to policies which are profitable at inception but become loss-making or have a significant risk of making a loss.

When contracts make a loss, that loss is incurred immediately, and when contracts make a profit, the profit will be earned over the term of those contracts. This is deliberately asymmetric. It is not yet clear how the insurer will manage the third category of contracts (those that may incur losses over time), but it is likely to require a significant change in systems and processes.

Variable Fee Approach

The Variable Fee Approach (VFA) is a different calculation to that of the GMM, but the objectives are the same. Subject to the constraints mentioned earlier, the VFA may be used for unit-linked, with-profits or other contracts in which the fulfilment cashflows vary in line with a pool of assets.

The 'variable fee' element represents the fee payable to the insurer, which also varies in line with the value of the pool of assets. Since the variable fee is a transfer of funds within the insurer, rather than a cashflow, it is not part of the fulfilment cashflows and so not part of the BEL. The concepts of RA and CSM also apply to the VFA.

A key difference between the GMM and the VFA concerns the discount rate. For the VFA, the discount rate is calculated with reference to the pool of assets, and the CSM is unlocked at each future period to absorb the change in the value of BEL and RA as a result of the change in the discount rate. Under the GMM, the discount rate is based on market observable data, and the CSM is not unlocked when the discount rate changes.

For example if the discount rate increases, the BEL and RA will fall. Under the GMM approach, similar to Solvency II, this will create a release of profits (which will be shown in the profit and loss statement (P&L) or income statement). In contrast, under the VFA approach, this profit release will get absorbed by the CSM (*ie* the CSM will be increased by the same amount) and will only be released as the CSM unwinds.

Disclosure requirements

The standard also describes the various disclosures, including:

- the insurance revenue earned
- insurance service expenses incurred
- insurance finance income and expenses.

Transitional Requirements

An important area for many insurance companies will be the transitional arrangements when IFRS 17 comes into effect. Companies will be required to calculate a transitional CSM for business that is already in-force when IFRS 17 takes effect. This is a significant area for many insurers and will be a key part of the transitional balance sheet.

There are three possible approaches to determining the transitional balance sheet:

- **Full Retrospective Approach (FRA)** – this must be used if it is practicable to do so and involves determining the position at transition as if IFRS 17 had applied throughout the full policy lifetime.

If it is not possible to use an FRA basis, for example due to lack of historic data availability for older policies, then two alternative approaches can be used:

- **Modified Retrospective Approach (MRA)** – a simplified version of the FRA calculations which uses reasonable information which is available without excessive cost or effort to produce a result as close as possible to a full retrospective calculation.
- **Fair Value Approach (FVA)** – where there is not sufficient information to carry out an MRA calculation a company can determine the transitional CSM using the fair value of the policies less the fulfilment cashflows at transition date.

2.5 Accounting for financial instruments

Accounting for financial instruments is currently contained in IFRS 9 (which replaced the earlier IFRS for financial instruments IAS 39 *Financial Instruments: Recognition and Measurement* in 2018).

Previously, under IAS 39, all financial assets were measured at fair value at initial recognition.

Subsequent to initial recognition, the measurement and presentation of movements in the value of a financial asset depended on the classification of the financial asset.

Under IAS 39, financial assets are classified at initial recognition into one of the following categories:

- fair value through profit or loss
- available for sale
- held to maturity
- loans and receivables.

Assets held for trading with the intention of selling in the short term would fall in the 'assets valued at fair value through profit or loss' category and quoted equities would fall under the 'available for sale' category. Quoted government and corporate bonds that are intended to be held to maturity would fall under the 'held to maturity' category and unquoted bonds would fall under the final category.

The default measurement under IAS 39 was changes in fair value were recognised in profit and loss as they arise ('FVPL') for some types of financial asset, and other financial assets were measured at amortised cost or fair value through other comprehensive income ('FVOCI').

For example, assets categorised as 'available for sale' continue to be measured at fair value whereas those categorised as 'held to maturity' are measured at amortised cost.

Under IFRS 9 the default measurement is FVPL, unless restrictive criteria are met for classifying and measuring the asset at either amortised cost or FVOCI. The IFRS 9 model is potentially simpler than IAS 39 as more types of financial asset will be measured at FVPL than was the case under IAS 39. For example, the default measurement under IAS 39 for non-trading assets was FVOCI, but under IFRS it will be FVPL.

The impact on profit and loss of moving to IFRS 9 will depend on the financial assets held by a company. For some companies the move to IFRS 9 could produce similar results to IAS 39. For companies where more financial assets will be measured under IFRS 9 at fair value with changes in fair value recognised in profit and loss as they arise then it could lead to more income statement volatility under IFRS 9 for the company, than was the previously the case under IAS 39.

Further differences (that are beyond the scope of SA1) are that under IFRS 9:

- there is likely to be earlier recognition of impairment losses on receivables and loans
- a new criteria for a less complex approach to hedge accounting has been introduced
- there are significant new disclosure requirements.

In 2013, analysis undertaken by the European Observatory on Health Systems and Policies highlighted how undertaking international comparisons of health systems can drive improvements.

The report can be found at:

https://www.euro.who.int/__data/assets/pdf_file/0009/244836/Health-System-Performance-Comparison.pdf

The challenge is in using appropriate data sources in order to avoid misleading signals that could lead to inappropriate policy responses. This document highlights the various approaches to health system comparative analysis.

Key indicators used to assess health system performance are displayed in the following table:

Health outcomes	
WHO	OECD
Disability-Adjusted Life Expectancy (DALE) Infant mortality	Avoidable mortality by selected conditions Infant mortality Perinatal mortality Low birth weight Incidence of infectious diseases Avoidable hospitalizations by selected conditions Survival rates from cancer In-hospital AMI mortality Vaccination rates Breast / cervical cancer screening
Responsiveness	
WHO	OECD
Patient-rated dignity of treatment Patient-rated autonomy and confidentiality Patient-rated promptness of attention Patient-rated quality of basic amenities Patient-rated access to support networks during care Patient-rated choice of care provider	Waiting times

Equity	
WHO	OECD
n/a	Equity of patient-reported health status
Efficiency	
WHO	OECD
Composite measure of performance	n/a

For benefits in the form of income (such as IP and accident and sickness), the definition of a claim, and therefore, what constitutes a claim-free year is not clear cut. [½]

For example a sickness claim lasting more than one policy year could be considered as one claim or two claims. [½]

IP policies with reviewable premiums are a form of NCD for long-term business, but here the 'discounts' are determined on a portfolio basis rather than on an individual policyholder basis. [½]

Also, discounts often relate to overall experience not just the claims experience (and can also be negative). [½]

The deferred period on an IP policy has the effect of reducing the number of claims, and so any NCD type scheme is less likely to provide additional reductions in the number of claims as a result of deterring people from claiming. [½]

Claims on IP policies, particularly those with long deferred periods, are relatively rare. An NCD scheme would therefore have less impact than for a PMI policy, where claims are more frequent. [½]

An NCD scheme may prove attractive to customers requiring comprehensive cover but at a 'discounted' price. [½]

For example, self-employed professionals, such as dentists, tend to buy policies with very short deferred periods, which can be expensive, but they may see the NCD scheme as a way of reducing their costs without reducing potential benefits. [½]

An NCD scheme would be possible for one-year renewable contracts such as accident and sickness and would have similar advantages to those described above for PMI policies. [½]
[Maximum 4]

Solution X2.2

The taxation environment is covered in Chapter 9.

(i) **Impact of tax changes on the insurer's business**

The taxation regime can impact the amount of tax paid and when it is paid, for both the insurer and the policyholder. [½]

This could lead to capital strain for an insurer if it is required to pay more or earlier tax than previously ... [½]

... and would reduce profitability and return on capital. [½]

The tax regime, and particularly how policyholders are taxed on the benefits of health and care insurance products, can affect the attractiveness of such products and their willingness to purchase cover. [½]

Policyholders could, for example, have to start paying tax on IP insurance benefits, reducing the actual benefit received. [½]

Alternatively, they could have to start paying tax on premiums, or lose the right to claim tax relief on premiums. [½]

The tax regime may offer tax advantages to insurers with the intention that these are passed on to policyholders to try and encourage them to purchase a particular health and care insurance product. [½]

For example, the rate applied to health and care insurers could vary by product, perhaps to encourage take up of products such as IP insurance that may reduce individuals' reliance on State-provided benefits. [½]

How the taxation regime is structured can affect the design of health and care insurance products, eg IP insurance products could have a minimum term of 5 years in order to receive tax-free benefits. [½]

If different types of providers are subject to different taxation regimes, it could be more (or less) advantageous for health and care insurers compared to other providers, making their products more (or less) attractive to customers compared to others. [½]

This is perhaps less likely for IP insurance than products such as long-term care insurance where there is a greater savings element. [½]

However, banks may be able to offer a product that is similar to IP insurance if a different tax treatment was in place. [½]

There may be changes to the way that different asset types are taxed that make one type more attractive than another, for example the balance between tax on income and gains might change. [½]

The government may choose to apply taxation changes to future new business only, which affects the sustainability of the contract. [½]

If the insurer increases premiums to offset an increase in a tax on its profits, this may reduce new business sales. [½]

However, a change in how IP insurance benefits are taxed in the hands of policyholders could affect both existing and new business volumes. [½]

[Maximum 5]

(ii) (a) **1% increase to sum assured**

There will be a corresponding one-off increase to reserves. [½]

This will make the item $V1$ and hence $(V1 - V0)$ immediately bigger than it would otherwise have been. [½]

Since this is a deduction from tax, it would reduce the tax paid in the current year. [½]

Future claims will be higher, ... [½]

... but so too will be the future releases from reserves which will largely offset this. [½]

The impact in future years will therefore only be second order, in respect of the release of any prudential margin on the value of the additional sum assured, creating a small profit that will incur a small additional tax liability. [½]

Any implementation costs will reduce tax in the first year. [½]

[Maximum 2]

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In particular, the accounts should split the long-term health business results from the short-term health business results, because the two have quite different characteristics. [½]

The data available to produce the accounts must be appropriate, and be in sufficient volume and detail to support the level of detail required in the accounts. [1]

It should be possible to produce the accounts readily from existing data systems with minimal extra effort. [½]

The procedures should not be overly onerous or penal, so that companies would feel happy to produce them and not worry about third parties' interpretations of them. [1]

The procedures should:

- be consistent with any other desired accounting principles, *eg* have the right balance between prudence and fair value [1]
- be consistent with the procedures used in other countries and with international accounting standards [½]
- bear in mind that there will be different purposes for the accounts, such as taxation, shareholders' interests, policyholders' interests and internal management interests. [1]

This will possibly mean that more than one set of accounts will be needed, because each party will probably have a different objective. [½]

The numerical accounts should also be supported by a commentary in the context of the business, ... [½]

... so that users of the accounts do not misinterpret them. [½]

[Maximum 11]

(iii) ***Professional guidance***

(a) *Institute and Faculty of Actuaries*

The Institute and Faculty of Actuaries issue the following guidance to members:

- The Actuaries' Code
- Actuarial Professional Standards
- Other non-mandatory guidance. [1½]

The Actuaries' Code

The Actuaries' Code is focussed on the ethical considerations that actuaries employed by health and care insurers should follow within any work that might reflect upon the actuarial profession. [½]

For a health and care insurer, this will ensure that actuaries employed within the organisation will carry out their roles with a high-level of professionalism. [½]

In particular, the Actuaries' Code would ensure any actuaries employed by the insurer displayed:

- integrity – acting honestly in the work carried out for the insurer. [½]
- competence and care – ensuring they have the required skills to carry out their role within the insurance company. [½]
- good communication – open and clear communication with all those that they work with, both within the insurer and with any external parties (*eg* reinsurers, investment managers), ensuring that the communication is appropriate for the audience. [½]
- impartiality – not being 'swayed' on a particular course of action without objective evidence, *eg* not recommending a particular reinsurer because of a personal acquaintance. [½]

Any areas where there is a risk a potential conflict of interest should be flagged with the insurer so that appropriate mitigation steps can be put in place. [½]

There is also a requirement around compliance, ensuring all work undertaken complies with the relevant regulations and guidance. This will reduce the risk for the insurer of fines that may be incurred for non-compliance. [½]

The final requirement is around speaking-up should an issue be identified, either within the insurer, or to an independent body if that is not possible. This will give the insurer confidence that there are no unreported issues within their organisation that could lead to regulatory or reputational issues. [½]

Actuarial Profession Standards (APSs)

APS L1 around the duties and responsibilities of Life Assurance Actuaries' would ensure that the insurer's Chief Actuary fulfilled all the requirements of this role. [½]

APS X2 around the reviewing of actuarial work, would give the insurer confidence that the work produced by its actuaries is of a high standard and suitably checked. [½]

This should give the insurer confidence that they have carried out all the duties expected of them and no area has been overlooked. [½]

All actuaries working for the health and care insurer would be expected to comply with APS L2 around the obligation to 'whistleblow'. This would achieve a similar goal the 'speaking out' requirement of the Actuaries' Code above, in ensuring that no issues were being hidden or unreported. [½]

Other non-mandatory guidance

The IFoA also publish non-mandatory guidance on whistleblowing for actuaries, but also for their employers. This should reassure the insurer that any issues within its business will be identified. [½]

The employer guidance should alleviate any concerns they may have about these responsibilities. [½]

Non-mandatory guidance is also issued on conflicts of interest. This would ensure that any conflicts of interest within the insurers business were managed appropriately. [½]
[Maximum 7]

(b) *Financial Reporting Council*

The Financial Reporting Council produce a set of Technical Actuarial Standards (TASs) which actuaries working for the insurer will be expected to comply with. [½]

If the actuarial work carried out within the insurer is within the FRC's 'UK Geographic Scope' it will be compulsory for its actuaries to comply with these standards. [½]

The Framework for the TASs sets out the authority, scope and application of the TASs. The intention is that it ensures that users to actuarial information are able to rely on it, that it is complete and explains any limitations. [½]

This will be a very important requirement for the insurer as it is likely to base information it makes public on reports prepared by its actuaries. [½]

It will also ensure that the information is able to be used for internal decision-making in order to achieve the aims of the insurer. [½]

The guidance includes a generic TAS (TAS 100) which will be applicable to all areas of technical actuarial work carried out by the insurer. [½]

TAS 100 sets out six high-level principles that should promote high quality technical actuarial work. For the health and care insurer this should again give confidence in the work that is being carried out and the extent to which it can be relied on within the business. [½]

TAS 100 includes requirements around proportionality and materiality. This means that the actuaries should not carry out excessive levels of work where it is not proportional to the materiality of the results. This should reassure the insurer that work is being done efficiently and to the extent required by the business involved. [½]

The actuaries working for the health and care insurer will also be expected to follow the requirements of TAS 200: Insurance. The intention of this is to promote high quality technical actuarial work on insurance matters where the FRC has identified a high degree of risk to the public interest. [½]

The scope of TAS 200 is wide, however, it includes the following areas of interest to a health and care insurer:

- technical actuarial work relating to the production of prudential regulatory balance sheets
- financial statements
- prudential regulatory capital requirement and the Own Risk and Solvency Assessment
- audit and assurance
- pricing frameworks.

[½ for each 2 examples, maximum 1]
[Maximum 4]

Solution X3.2

(i) **Policy information**

- policy type [½]
- date of birth [½]
- gender of policyholder [½]
- number of people covered (or more details of additional people covered, such as age and gender, if available) [½]
- office premium and any extra premium [½]
- frequency of premium payment [½]
- sum insured / benefits levels [½]
- product details (*eg* deferred period, excess, hospital band) [½]
- any additional benefits [½]
- date that policy was taken out [½]
- policy expiry date / policy term [½]
- current status, *eg* healthy, sick but not claiming, claiming [½]
- if claiming, need details of claim, *eg* date and cause of claim [½]
- (possibly) occupation, location (if basis used has this detail) [½]

[Maximum 5]

(ii) **Checks**

- spot checks, *eg* check sum insured or benefit levels for certain specified policies [½]
- check that the data is complete, with as little as possible missing [½]
- check maximum / minimum / average sum insured, benefit levels, age, term, *etc* to ensure that they are reasonable [½]
- compare total policies with last time and reconcile the 'ons' and 'offs', *ie* current business in force should equal last time's plus new business less leavers, ... [½]
- ... if possible do this for number of contracts, premiums and benefit levels [½]
- if possible check the movements with other sources that are available, *eg* accounting information [½]
- analyse new business rates, withdrawal or renewal rates, *etc* to check they are reasonable [½]
- compare with data for other valuations if available, *eg* for embedded value [½]
- an analysis of surplus might highlight some errors [½]

[Maximum 3]

(iii) ***Advantages and disadvantages of internal model approach******Advantages***

The insurers can tailor the internal model specifically to the risk profile of business. [½]

However, the standard formula will lack flexibility to allow it to adapt to the range of risk profiles of the insurers within the country. [½]

The standardised approach will most likely be calibrated conservatively. [½]

Therefore, internal models could produce lower capital requirements. [½]

This would have advantages for insurers in capital management and pricing. [½]

The development of internal models is likely to improve risk modelling and provide additional insights in risk profile for insurers. [½]

This should give those firms that use them a competitive advantage. [½]

An internal model is likely to be an important part of most companies' risk management framework (*ie* it helps to embed a risk management culture). [½]

Internal model may be based on existing model so may reduce training requirements and costs compared to introducing a new capital modelling approach. [½]

Requiring regulatory approval gives credibility to internal management information that the model will produce, ... [½]

... *ie* it should ensure senior management buy-in to the output and use it in management decisions. [½]

Disadvantages

It will take significant time to develop an internal model, which will add to costs and cause strain on resources. [½]

The insurers may not have the required expertise to build any model in-house. This may add costs for the insurer if external advice is required *eg* from consultants. [½]

Regulatory approval can take a long time if there is a backlog of initial applications. [½]

There may also be minimum requirement of its use within the company that will need to be complied with to demonstrate the model is used within the insurer's business. [½]

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... but if the sale price is agreed by some other means, it is not possible to comment on its likely size in comparison with the EV. [½]

If the EV is to be used, then there will be a need to consider the basis for the calculations. [½]

The sale basis is a question of negotiation. The purchaser (seller) will favour a basis that produces a lower (higher) EV. [1]

Whether this results in a higher or lower EV than one using the published EV basis will depend on the strength of the negotiating parties. [½]

Some of the features that may affect this are as follows:

- The sale of the business is not a 'forced' sale. The seller is therefore not in a weak position and may be able to achieve a reasonable price for the business. Following this logic, the sale price may exceed the EV. [1]
- Conversely, if the withdrawal from the market has a specific driver, *eg* changing capital requirements of this class of business under Solvency II, the seller may be in a weaker position and not achieve as good a price. [½]
- The published EV is market-consistent so should in principle give values achievable when selling a block of business. [1]
- The purchaser may base the negotiations on their own expense levels rather than the seller's ... [1]
 - ... so if the sale is achieved to a very low expense company, a price higher than the EV may be achieved because of the lower expenses expected to be incurred by the purchasing company. [½]
 - It is likely that any such synergy would be shared. [½]
- On the other hand, the sale price will need to allow for transaction costs ... [½]
 - ... and the costs of the new company taking the business on board. [½]
- It may be argued in negotiations that the event of selling the business will cause a surge of lapses / surrenders. [1]
 - The purchasing company may insist on a very cautious (*ie* big) allowance for lapses in the sale price. [½]
 - This might make the sale price lower than the published EV. [½]
- There may be an argument from the purchaser that there will be greater uncertainty regarding the experience of the business post-sale. [1]
 - The purchaser may therefore push for greater allowances for risk margins and required capital, resulting in a lower EV. [1]

- Another issue is that the published EV will be based on assumptions set at a single point in time each year. The sale price is a one-off that may be determined between annual reporting dates. [½]

The sale price may therefore be higher or lower because of unusual current conditions (eg unusually high or low interest rates). [1]

Overall, with factors going in different directions, it is not possible to say which of the figures will be larger. [½]

[Maximum 11]

(vi) ***Reasons for an analysis of surplus***

The insurer could use the analysis to show the financial impact of differences between the actual and expected experience. [½]

This can be used to help ensure future assumptions are set appropriately and allow for expected trends in the business, eg medical advances helping reduce claim durations as claimants can return to work earlier. [½]

As the IP insurance business is long-term, the insurer should take care not to amend the assumptions too quickly but ensure they reflect the long-term experience. [½]

The insurer could use this analysis to help set its assumptions for valuing the block of business. It could also be of use to any company considering purchasing the block of business to help set its assumptions for the business. [½]

The assumptions could be used to profit test the new business and so help to determine whether to continue to sell IP insurance. [½]

The analysis should help the insurer identify any causes for concern so that corrective action can be taken. [½]

This may help the insurer decide whether to sell the business, or whether it can be managed within the insurer. [½]

Considering trends in the analysis of experience over time can also provide the insurer with useful information to help plan its risk management and strategy for the product. [½]

The analysis of surplus will also provide information on impact of writing new business for the insurer. It may be that its new business is profitable, but its existing business is loss making. [½]

If the analysis is carried out independently of the valuation data, the insurer can use it as a check on the valuation data and the valuation process. [½]

[Maximum 3]

(vii) ***Analysis of profit for a short-term insurer***

For long-term insurances, the analysis of surplus looks at the surplus arising each year throughout their lifetime. [½]

For existing business at least, there may be little chance to react to adverse experience since the premium rates are usually fixed. [½]

For PMI, there is the opportunity at renewal to change prices, product design, underwriting or claim conditions ... [½]

... and hence it is useful to analyse profit more regularly throughout the year. [½]

An analysis of surplus would normally be an annual exercise for a long-term insurer. [½]

For a PMI insurer, the company would again assess the profitability of business by yearly cohort, but would also perform quarterly analyses to establish up-to-date positions. [½]

The quarterly calculations will be fed through to the price being charged for new business, to take account of the most recent changes in claim trends. [½]

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X6.1 An established long-term insurance company writes a range of without-profits business. The company sells mainly through financial advisers, although sales through its own direct sales force have been growing steadily in recent years and now account for approximately 20% of new regular premium income.

For several years the company has been writing substantial volumes of accelerated critical illness insurance policies. A recent crude investigation into the profitability of the in-force business for this contract showed that the business was making a loss.

The company has therefore decided to investigate the situation more fully, including an assessment of the financial consequences for the company if the situation were to persist.

- (i) Discuss the possible reasons for the current apparent loss-making situation. [15]
- (ii) Describe the principal investigations that would be conducted in order to identify the reasons for the losses and their financial impact if allowed to continue. [16]
- (iii) Discuss possible responses that could be made to the problems identified in part (i). [15]

[Total 46]

X6.2 A large general insurer has a private medical insurance (PMI) subsidiary. This subsidiary writes a range of health insurance products, all of which provide indemnity for private medical treatment for individual customers in a developed country with a comprehensive State healthcare system.

The subsidiary has been very successful over the many years that it has been selling this business, but in the last few years both profits and volumes of in-force business have been significantly lower than expected.

A new managing director of the parent company has just taken up their position and is concerned about the situation. They are aware that in the last few years several competitors have entered the PMI market who, although smaller, appear to be selling similar products more cheaply and have been increasing their market share at the subsidiary's expense.

They have also noticed that the solvency position has deteriorated noticeably over the last few years and the level of technical provisions has increased significantly.

The marketing department has come up with two suggestions to address the issue:

- A discount to the premium for personal customers based on loyalty. This may, or may not, be based on previous claims experience.
- Start selling products through the internet. (The company currently sells its products through its direct sales force, brokers and telephone sales.)

The new managing director has asked for a report giving them a better understanding of this business, including a full explanation of the current situation and recommended actions to be taken to improve matters.

- (i) Suggest possible reasons for the recent poor performance relating to the following areas, including comments on how likely these are to continue:
- (a) Low volumes of new business [15]
 - (b) Low profitability [7]
 - (c) Higher technical provisions [5]
- (ii) Discuss the marketing department's suggestions, together with suggested improvements. [12]
- (iii) Suggest further actions to be considered in order to address this situation. [15]

You should ignore the effects of reinsurance, and need not consider legislative changes.

[Total 54]

END OF PAPER

This could be as a result of improvements to the State healthcare services or bad publicity about PMI in general, which could affect sales. [½]

An economic downturn could result in people having less disposable income to purchase a low-priority product, such as PMI. [½]

[Maximum 15]

(b) *Low profitability*

Claims experience

The falling profits could be due to rising claim rates. [½]

If the insurer's rating structure does not truly reflect the risk, the mix of business may have been more towards sectors where the increase in claims has been greater than the corresponding increase in premiums (*ie* anti-selection). [1]

For example, there may be an increase in the average age of people covered where premiums do not increase with age by as much as claims do. [½]

The number of claims per policy could be increasing due to:

- a genuine increase in number of people requiring treatment [½]
- greater demand for medical treatment as people's expectations increase [½]
- increasing numbers of people becoming aware that they have PMI cover [½]
- the increasing maturity of policyholders (*ie* the initial selection effect mentioned above) – but this will be more of a problem for insurers new to PMI. [½]

The amount of claims could be increasing due to:

- increasing medical inflation, which is usually significantly higher than general inflation, ... [½]
- ... *eg* due to the increasing costs of medical equipment or consultants' fees. [½]
- the impact of improving medical technology. The type of treatment used for a particular illness could change and be more expensive. [½]
- In addition, there are many diseases for which there are now treatments, which were not available a few years ago. [½]

The standards of medical underwriting could be poor due to, for example: [½]

- insufficient medical evidence being collected [½]
- poor training of underwriting staff [½]
- lowering standards as a result of cost cutting. [½]

These may result in claims for pre-existing conditions being (wrongly) paid out. [½]

There may have been poor claims control, *eg* due to cutbacks or poor training. [½]

This may result in treatments being covered that should not have been, or in a higher amount of claims being paid out. [½]

Premiums

The insurer's premium rates may be lower than required to make sufficient profit due to competitive (and possibly moral) pressure to keep premium increases lower than claims inflation. [1]

In addition, overall premiums levels may be less than assumed (despite premium increases) due to changes in the mix of business, for example: [½]

- people purchasing (or switching to) less valuable products, *eg* with higher excesses [½]
- fewer people being covered by each policy, *eg* as a result of reducing family sizes. [½]

All of these can have adverse effects on overall profitability. [½]

The premium rates may also be insufficient cover the technical provisions, leading to a reduction in profits. [½]

Expenses

Expenses may have increased by more than expected, *eg* due to increased claims administration costs as conditions become more complicated. [½]

However, expense reductions may reduce the quality of customer service, and so more may need to be spent in order to improve this. [½]

[Maximum 7]

(c) *Technical provisions*

The increase in technical provision could be as a result of either the best estimate liability increasing or the risk margin increasing. [½]

The best estimate liability may have increased due to a change to the:

- model points used to calculate an approximate best estimate liability [½]
- assumptions used (these should always be best estimate) [½]
- discount rate used. [½]

The assumptions could need updating due to:

- large claims becoming longer tailed, *eg* if treatments become more complex, some may take longer to settle [½]
- a backlog in the payment of claims (particularly large ones), which has been getting worse. [½]

The risk margin may have increased due to a change to the:

- capital required for each future projected year [½]
- cost of capital rate required to be used [½]
- discount rate used [½]
- method for approximating the risk margin (*eg* changing the driver used) [½]
- change to any diversification benefit. [½]

The calculated provisions may have been incorrect, *eg* due to: [½]

- an inappropriate method [½]
- incorrect data being used. [½]

[Maximum 5]

(ii) ***Discussion of ideas with suggested improvements***

Loyalty discount to personal customers

This would apply a discount to the customers' premium on subsequent renewal. The size of the discount would reflect the time that the customer has had a PMI policy with the insurer.

[½]

Possible advantages are:

- it encourages the customer to remain with the original insurer, and so will keep in-force business volumes high [½]
- can be justified on the basis that the cost of acquiring business is greater than the cost of retaining a policy at renewal [½]
- it is a new idea, so it might attract customers who would not otherwise purchase PMI. [½]

Possible disadvantages are:

- if premiums do not fully reflect the effect of increasing age on claims (*ie* younger customers are cross subsidising older ones), per-policy profits from older customers will be lower [½]
- claims are expected to increase as the initial selection effect (described above) wears off [½]
- the perceived impact of the discount on an individual's premium may be absorbed by the effect of inflationary premium increases, and so may not be appreciated by customers. [½]

The expected effect of the discount should be allowed for when setting the initial premium.

[½]

New customers may need to be charged a higher premium if the cost of the discount cannot be offset by the increase in profits gained from retaining more customers. [½]

A claims-related discount could be applied, *eg* based on the number of claim-free years. [½]

Advantages of a claims-related discount are:

- This would encourage customers to renew, but in particular those customers with good claims experience. [½]
This is a proxy to state of health and is a good indication of the likelihood of future claims. [½]
- It may also discourage people from making small claims, which reduces administration costs. [½]

Disadvantages of a claims-related discount are:

- Again the initial premium may need to be higher than previously, but an introductory discount for new customers may also be considered. [½]
- Can be difficult to decide what constitutes a 'claim'. [½]
For example, one customer who claims for a series of treatments for a malignant tumour will have a very different state of health to someone who has just had an initial consultation for a suspect lump for which the result is 'all clear'. [½]
There are ethical issues of whether customers should be penalised for being ill – something that is largely out of their control. [½]
The insurer could also be accused of discouraging customers from taking medical advice or treatment. [½]
- The mechanism for assessing the discount will need to be developed. It should be simple enough for customers to understand it, but not so simple as to prevent the desired financial effect being achieved. [½]
- Administrative and pricing systems will have to be adapted to cope with the discount. [½]

Also consider:

- performing modelling to assess the financial effect of the chosen scale [½]
- conducting market research to assess whether it will be fair and acceptable. [½]

Selling through the internet

The main advantages are:

- Using a different distribution channel may increase sales. Many of the new competitors may be selling much of their business on the internet. [½]

- It may appeal to a different market segment. For example, PMI traditionally appeals to well-off middle aged customers, so this might attract younger customers (who on average claim less). [½]
- Sales may be quicker, reducing selling costs, as there is much less human involvement. [½]

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