

CMP Upgrade 2023/24

Subject SP7

CMP Upgrade

This CMP Upgrade lists the changes to the Syllabus, 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 2023 CMP to make it suitable for study for the 2024 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 *2024 Student Brochure* for more details.

We only accept the current version of assignments for marking, *ie* those published for the sessions leading to the 2024 exams. If you wish to submit your scripts for marking but only have 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 2024 session.

This CMP Upgrade contains:

- all significant changes to the Syllabus and Core Reading
- additional changes to the ActEd Course Notes and Assignments that will make them suitable for study for the 2024 exams.

1 Changes to the Syllabus

There have been a significant number of changes to the wording of the syllabus objectives, although the underlying meaning is essentially unchanged. However for completeness, since there have been many such changes, the full list of syllabus objectives is included below.

1. General insurance products and general business environment (20%)

Understand the main features of general insurance markets and both insurance and reinsurance products, along with consideration of customer needs and risks posed to the insurers. Understand the implications of key aspects of the general business environment on general insurance companies:

- 1.1 The main types and features of general insurance markets and products considering: (Chapters 2 and 3)
 - the needs of customers
 - the financial and other risks for the general insurer including their capital requirements and possible effect on solvency.
- 1.2 The main types of reinsurance products for general insurers and the purposes for which they may be used. (Chapters 5 and 6)
- 1.3 Implications of the general business environment on general insurers in terms of: (Chapters 7 and 9)
 - marketing strategies
 - fiscal regimes
 - inflation and other economic factors
 - legal, political and social factors
 - climate and environmental factors
 - professional guidance
 - technological change.
- 1.4 The key features of the Lloyd's market. (Chapter 10)

2. Risk, uncertainty and regulation (15%)

Understand the major areas of risk and uncertainty in relation to reserving and capital modelling within general insurance companies as well as the regulatory framework for general insurers:

- 2.1 The major areas of risk and uncertainty for general insurers with respect to reserving and capital modelling, in particular those that may threaten profitability or solvency. (Chapter 11)
- 2.2 The regulatory framework for general insurers, including the purpose of regulation and methods of regulation. (Chapter 8)

3. Reserving (30%)

Understand reserving methods, bases and issues, including the evaluation of reserving results and analysis and communication of uncertainty in reserving:

3.1 The reasons for calculating general insurance reserves. (Chapter 15)

3.2 Understand and analyse the issues that can affect reserving work using triangulations and how to manage them. (Chapter 15)

3.3 Appropriate reserving bases for general insurance business, including: (Chapter 14)

- different reasons for calculating reserves
- appropriate assumptions in each case
- when to calculate reserves at class level, at individual policy level or at claim event level
- why the assumptions may differ from a rating exercise
- allowance for future inflation
- whether or not to discount for investment income
- approach for additional unexpired risk reserve
- communication of the reserving basis.

3.4 Stochastic reserving processes including: (Chapter 16)

- uses of stochastic reserving methods
- likely sources of reserving uncertainty
- types of stochastic reserving methods:
 - analytic methods
 - simulation-based methods
- Mack's model and the ODP model
- applying bootstrapping to these two models
- issues, advantages and disadvantages of each of the models
- aggregate the results of stochastic reserving across multiple lines of business, and methods of correlation.

3.5 Reserving result analyses. (Chapter 17)

3.5.1 Factors to consider in assessing the reasonableness of the results of a reserving exercise.

3.5.2 Typical diagnostics commonly used to assess the reasonableness of the results of a reserving exercise.

3.5.3 Factors to consider in assessing the reasonableness of changes in results of a reserving exercise over time.

3.5.4 Analysis of experience in the context of a reserving exercise.

- 3.5.5 How alternative results of reserving exercises can arise and professional issues in resolving them.
- 3.6 Uncertainty and its communication in reserving. (Chapter 18)
- 3.6.1 'Best estimate' reserve.
- 1 3.6.2 Approaches to estimating ranges of reserves:
- stochastic models
 - scenario tests
 - use of alternative sets of assumptions.
- 3.6.3 Issues to consider when communicating reserve ranges and uncertainties.
- 4. Capital modelling (17.5%)**
- Understand capital modelling techniques, parameterisation issues, and methods for assessing different risk types, including considerations relevant to undertaking a capital modelling exercise:
- 4.1 Capital modelling and application of relevant capital modelling techniques for general insurers.
- Approaches to capital modelling: (Chapter 20)
 - deterministic models
 - stochastic models.
 - Issues with parameterisation of capital models: (Chapter 20)
 - developing assumptions
 - validation.
 - Approaches to assessment of capital requirements for the following risk types: (Chapter 21)
 - insurance risk
 - market risk
 - credit risk
 - operational risk
 - liquidity risk
 - group risk.
- 4.2 The importance of diversification in capital modelling. (Chapter 22)
- 4.3 Practical considerations of undertaking capital modelling. (Chapter 23)

5. Data, investigations, reinsurance and investment (17.5%)

Understand the use of data and key actuarial investigations in reserving and capital modelling. Understand reinsurance programmes including purchasing decisions and reserving. Understand investment and asset-liability management and methods and principles of accounting as applicable to a general insurer:

- 5.1 Data in reserving and capital modelling: (Chapter 12)
- types of data that are used
 - main uses of data
 - requirements for a good information system
 - possible causes of data errors
 - effects of inadequate data.
- 5.2 The major actuarial investigations and analyses of experience undertaken with regard to reserving and capital modelling for general insurers. (Chapter 13)
- 5.3 Factors that influence the choice of an appropriate reinsurance programme for a general insurer. (Chapter 24)
- 5.4 Appropriateness of alternative reinsurance structures for a general insurer. (Chapter 24)
- 5.5 The impact of capital management on reinsurance purchasing decisions. (Chapter 24)
- 5.6 The main approaches to reserving for outwards reinsurance and when to apply them: (Chapter 25)
- gross less net
 - application of standard techniques to reinsurance data
 - use of appropriate factors
 - application of detailed contract terms.
- 5.7 Suitable approaches to reserving for inwards reinsurance. (Chapter 25)
- 5.8 Investment and asset liability management (ALM) considering: (Chapter 19)
- the principles of investment
 - the asset-liability matching requirements of a general insurer
 - how projection models may be used to develop an appropriate investment strategy.
- 5.9 Methods and principles of accounting specific to a general insurance business and interpret the accounts of a general insurer. (Chapters 26 and 27)

Additionally, the split between knowledge, application and higher order skills has changed. The syllabus now says:

As a guide, in the examination of this subject, you can expect that approximately 15% of the total number of marks for this examination be allocated to the demonstration of knowledge, 60% to application and 25% to higher order.

2 Changes to the Core Reading

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

Chapter 3

Section 1.1

Under the section entitled 'Directors' and Officers' (D&O) liability, the following sentence has been added at the end of the first paragraph of Core Reading:

This is sometimes referred to as management liability insurance.

Chapter 4

Section 0

This section has been extensively re-written. We believe that the key message behind this content remains the same, however for completeness we have included replacement pages 1-2 at the end of this document.

Section 2

This section has been deleted, along with the associated ActEd text.

Section 4

This section, entitled 'Suggested reading', has been deleted.

Chapter 6

Section 6.2

Some content has been added to third paragraph of Core Reading. It now reads:

Usually it is only possible to reinsure a layer above a specified amount. This specified amount may be in excess of the current level of reserves (out of the money), equal to the current level (at the money), or below the current level (in the money). There could be an upper limit. If the ultimate cost of losses is in excess of this, the insurer is liable for the excess. The reinsurer may also insist that the insurer has a small participation in the layer, to retain a commercial interest in keeping claims costs down.

Chapter 7

Section 1.3

The last paragraph on page 6 has been updated. The second sentence of this paragraph now reads:

At the end of 2021, there were 90 syndicates at Lloyd's.

Chapter 9

Section 1.5

The following sentence has been added to the end of the section entitled 'Currency hedging':

Where there is a mismatch between the reporting currency of an insurer and the majority of their liabilities, this can increase the capital requirements to reflect the currency mismatch.

Section 4

The following bullet point has been added to the list of bullet points on page 41:

- **increasing pressure for faster and more detailed regulatory reporting, which creates a need for more effective approaches to actuarial work.**

Chapter 10

Section 0

The first paragraph of Core Reading on page 2 has been updated. It now reads:

Lloyd's is a key player in the worldwide general (non-life) insurance and reinsurance market, with some £39.2 billion of gross written premium in 2021. It is licensed to cover risks in over 200 countries and territories, according to local rules.

Section 2.1

The third sentence in the section entitled 'Managing agents' has been updated. It now reads:

By 2021 there were 50 managing agents, managing a total of 90 active syndicates.

In the section entitled 'Integrated Lloyd's Vehicles', the fourth paragraph of Core Reading has been updated. The first sentence of this paragraph now reads:

Of the 90 active syndicates at the end of 2021, 12 of these are special purpose arrangements (SPAs).

The following paragraph has been added at the end of the section entitled 'Integrated Lloyd's Vehicles':

At the end of 2021, there were also three syndicates set up as a 'syndicate in a box'. This is a new format set up in 2020 that targets bringing new and innovative business to Lloyd's.

Section 2.2

The following sentence has been inserted into the last paragraph of Core Reading on page 6, immediately after the sentence 'The rest of the underwriters are known as *following underwriters.*'

For risks placed within the Lloyd's market, there will also be a 'Lloyd's lead' where the lead underwriter is not a Lloyd's syndicate.

Chapter 12

Section 1.2

The final bullet under the heading 'Possible reasons for heterogeneity' now reads:

- **the coding used for the rating factors may vary from company to company.**

Section 2.2

Much of the Core Reading under the heading 'Data protection' has been deleted. You can cross out all text from the paragraph beginning '**The EU General Data Protection Regulation replaces the Data Protection Directive...**' up to and including the bullet point ending '**Data Protection Officers will be mandatory for certain higher risk controllers.**'

Section 3.2

The following sentence has been deleted from the second paragraph of the section entitled 'Legacy systems':

It is rare in such circumstances for it to be possible to transfer all historical data from one system onto the other.

The following sentence has been added onto the end of this paragraph:

Alternatively, the insurer may build a new system that is able to better cope with the differences in the data available.

Section 4.4

The following paragraph has been deleted from the section entitled 'Cross-selling':

Cross-selling is the selling of similar insurance products or the selling of products that can be incorporated with the actual insurance cover being sold.

A new paragraph has been added to this section, immediately after the first paragraph, as follows:

Cross-selling is the selling of additional insurance products to existing customers.

Section 4.5

The first paragraph of Core Reading on page 25 now reads:

An insurer whose only reserves are aggregate reserves for the risk group will not be able to record individual outstanding claim estimates. In all other cases, the reserve amount should be recorded on the system and the date when it was set. To compile loss-development statistics, they should be retained, even when they are superseded by revised estimates.

Section 5.3

The following sentence has been added after the first paragraph under the heading 'Case estimates':

In particular, when claims are settled and fully paid, it is important to update the case values down to zero.

The section entitled 'Return premiums' is now entitled 'Return premiums or reinstatement premiums.' The first sentence of the section now reads:

Return premiums or reinstatement premiums can sometimes be recorded as a claim.

Section 6.2

The following bullet point has been added to the second list of bullet points:

- **rate index.**

Section 9

The following bullet point has been added to the second list of bullet points:

- **Inadequate capital held.**

Chapter 13

Section 4.6

The second paragraph of Core Reading has been amended and a new paragraph added after it. These now read:

In the case of reinsurance, it is a statutory requirement to analyse claims both gross and net of reinsurance as the balance sheet of an insurance company is presented separately for assets (*ie* reinsurance recoveries) and liabilities (*ie* gross claims). This may also help to produce more reliable projections. This is especially important where the reinsurance takes some form of XL cover, where there are limited reinstatements, or the cover varies over time.

Where there is a mix of proportional and non-proportional cover for a class, it can be helpful to estimate the recoveries for these separately. Certain accounting regimes, *eg* IFRS 17, stipulate this.

Section 4.7

The following sentence has been appended onto the end of the second paragraph of Core Reading:

Changes to the method of reporting claims, *eg* online claims portals, may change policyholder reporting patterns and increase or decrease the proportion of nil-claims.

Chapter 14

Section 5

The following text has been inserted before the last paragraph in this section:

When making an allowance for excess inflation, consideration of the appropriate inflation forecasts is a key judgement. Material claims inflation has been seen in some classes when economic inflation has been very low.

It is also important to consider whether changes to inflation will affect existing and future claims in different ways.

The following sentence has been inserted at the end of this section:

We should consider inflation allowances not only in the cost of settling claims, but also inflationary trends in claim frequency (which could be negative) when setting reserves.

Section 8.1

In the last paragraph on page 17, a sentence has been inserted after the sentence that ends 'this is unlikely to be the case and consideration of watchlists becomes more important.'. This sentence reads:

When constructing benchmarks from market data, additional allowance may be needed for some class types, particularly for new classes with no internal claims development experience.

Chapter 15

Section 2.3

The following bullet points have been added to the list at the bottom of page 12:

- **Facilitates easier discussion of results with underwriting teams.**
- **Allows easier analysis of the impact of changes in portfolio mix.**

Section 2.6

The following paragraph has been added at the end of the section entitled 'Distortions in the data':

When considering aggregate claims data, this can mask underlying trends where the frequency and severity trends are moving in different directions. For example, during the Covid-19 pandemic, many classes of business saw large reductions in claim frequency and slow down in reporting and settlement of claims. This will limit the relevance of this period to future claims projections.

On page 31, the first sentence of the second paragraph now reads:

In 2017 the Ogden rate was revised from 2.5% per annum to -0.75% per annum in England and Wales.

The following text has been added after the second paragraph on page 31.

In 2019, this was revised to -0.25% and will be reviewed again within five years to reflect the latest market conditions. Different Ogden rates are applicable to Scotland creating further complications for reserving actuaries.

Section 3.2

The following paragraph has been inserted at the end of the section entitled 'Analysis and selection of link ratios':

It is important for a reserving actuary to develop techniques to spot trends and make judgements when selecting a development pattern. For example, comparison of the selected link ratio to that seen in recent periods.

The following sentence has been inserted immediately before the heading 'Paid versus incurred modelling':

Where approximations are used to allow for missing data, it is important to consider how material the assumption made is and communicate this to users of the analysis.

Section 4.3

Some text has been added to the last list of bullet points in Section 4.3. The fifth bullet point now reads:

- **Where premium rate changes are used, these are often only for renewed business and not for new business (which may be written at lower rates). It is also important to consider the reliability of the premium rates being calculated and not treat them as factual information, and to consider how much of the rate change relates to changes in terms and conditions (eg exclusions of claim types) or changes to the attachments, limits and deductibles, which could change the characteristics of the claims in the portfolio.**

Another bullet point has also been added to this list. It reads:

- **Whether the IELR assumption should be fixed when reserving for the first time or revised in each analysis.**

Section 8.7

The following text has been added to the end of this section:

Accounting regulations usually dictate that AURR should be held at an entity level rather than a lower level of granularity. However, a company can choose to hold AURR at a different level of granularity where defined by internal accounting policy.

An AURR is held based on known information at the balance sheet date. It is usually not required to be set up to reflect post balance sheet events (eg a natural catastrophe).

New section

A new section has been added immediately before the Glossary items.

Please insert pages 78a-78d which can be found at the end of this upgrade.

Chapter 16

Section 0

The last paragraph of Section 0 now reads:

This chapter includes a number of references to the book ‘Hindley, David, *Claims Reserving in General Insurance*, 2017, Cambridge University Press’ and two papers produced by the Pragmatic Stochastic Reserving Working Party (PSRWP). The material contained in these does not form part of the Core Reading and is therefore not examinable. References have been included to direct an interested reader to a source of additional information:

- **Hindley, David., *Claims Reserving in General Insurance*, 2017, Cambridge University Press. This is available to members of the IFoA in e-book format via the IFoA website.**
- **Carrato, Alessandro., McGuire, Grainne., Scarth, Robert., *A Practitioner’s Introduction to Stochastic Reserving*, 2016, <https://www.actuaries.org.uk/documents/practitioners-introduction-stochastic-reserving>.**
- **Scarth, Robert., Jain, Saanva., Cerchiara, Rocco Roberto., *A Practitioner’s Introduction to Stochastic Reserving: The One-Year View*, 2020, <https://www.actuaries.org.uk/system/files/field/document/A-Practitioners-Introduction-One-Year-View.pdf>.**

Chapter 17

New section

A new section has been added immediately after Section 2.8. You may wish to renumber subsequent section accordingly. The new section reads as follows:

2.9 Incremental development triangles

These diagnostics are used to consider the level of IBNR or reserves for a cohort compared to movements prior cohorts have seen to develop to ultimate.

While not a precise technique, this can give a good sense check on the selections where the outcome is particularly judgemental or when considered at a less granular level than the reserves were calculated at.

Section 5.2

There have been several changes to page 21. Please use replacement pages 21-22 provided at the end of this document.

Chapter 18

Section 2.1

The following sentence has been added immediately before the last paragraph of Core Reading on page 11:

[The material contained in the paper referred to is not part of the Core Reading and referenced for student interest.]

Chapter 25

Section 3.3

Under the heading 'Advantages and disadvantages', the first disadvantage has been corrected to read:

- **all the issues described previously in this chapter in relation to inwards reinsurance, still apply for non-proportional business (complexity, eg order of operation of contracts, types of cover)**

Chapter 26

Section 2.5

Most of this section has been deleted. It now reads:

In the UK there are two accounting regimes that may apply:

- 1. All companies, including insurance companies, that have any debt or equity listed on a European stock exchange, must produce financial statements in accordance with International Financial Reporting Standards (IFRS).**

The new International Financial Reporting Standard for insurance (IFRS 17) was issued in 2017, to be effective for annual periods beginning on or after 1 January 2023. Before then, IFRS 4 Insurance Contracts applied.

IFRS 17 is covered in Subject SA3.

Other standards of particular relevance to insurers include:

- **IFRS 7 Financial Instruments: disclosures**
- **IFRS 9 Financial Instruments.**

- 2. All unlisted companies, which include insurance companies that are unlisted subsidiaries, may report either on an IFRS basis or in accordance with UK Financial Reporting Standards and related guidance often referred to as UK GAAP.**

Other than as described in this chapter and Chapter 27, candidates for Subject SP7 examinations will not be expected to be familiar with the accounting concepts and principles that apply in any particular country. They may, however, be expected to discuss the problems that arise in defining such concepts and principles and putting them into practice, and the implications for the interpretation of insurers' accounts.

3 Changes to the ActEd material

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

ActEd Course Notes

Chapter 4

Section 2

This ActEd text in this section has been deleted, along with the associated Core Reading.

Chapter 6

Section 5.3

Much of this section has been deleted. Only the final list of bullet points remains, so the section now reads:

Specific types of financial reinsurance (or finite risk reinsurance) include:

- time and distance deals
- spread loss covers
- financial quota share
- industry loss warranties.

Chapter 15

New section

As described above, a new section has been added immediately before the Glossary items.

Please insert pages 78a-78d which can be found at the end of this upgrade.

Chapter Summary

The following text has been added to the end of the Chapter Summary:

In addition to point estimates of reserves, cashflows of future payments may also be required, *eg* for regulatory reporting purposes. These may include cashflows of claim payments, premium receipts or expense payments, and will often be derived from the underlying reserving projections.

4 Changes to the X Assignments

Assignment X4

Solution X4.9(iii)

The following points have been added to the solution:

Incremental development triangles [½]

These diagnostics are used to compare the level of IBNR or reserves for a cohort to the movements seen on prior cohorts to develop to ultimate. [½]

While not a precise technique, this can give a good sense check on selections, particularly where significant judgement has been used. [½]

It is generally more useful when viewed at a less granular level. [½]

Markers, please give credit for a maximum of seven options.

5 Other tuition services

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

5.1 Study material

We also offer the following study material in Subject SP7:

- Flashcards
- Mock Exam and AMP (Additional Mock Pack)
- Revision Notes
- ASET (ActEd Solutions with Exam Technique) and Mini-ASET.

For further details on ActEd's study materials, please refer to the *2024 Student Brochure*, which is available from the ActEd website at **ActEd.co.uk**.

5.2 Tutorials

We offer the following (face-to-face and/or online) tutorials in Subject SP7:

- a set of Regular Tutorials (lasting a total of three full days)
- a Block Tutorial (lasting three full days)
- an Online Classroom.

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

5.3 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 *2024 Student Brochure*, which is available from the ActEd website at **ActEd.co.uk**.

5.4 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 **SP7@BPP.com**.

***This page has been left blank so that you can slot the replacement pages
into your Course Notes***

4

Problem solving

Syllabus objectives

There are no syllabus objectives specifically covered in this problem solving chapter.

0 Introduction

The ability to look at a problem, solve it and then communicate the results clearly is a very important skill that actuaries need in their day to day work, whichever field they work in. The examiners will test your ability to solve such problems in the exam.

As part of their preparation for the assessment, candidates must demonstrate knowledge and understanding of the subject as a whole, in order to apply and produce solutions to problems relating to General insurance reserving and capital modelling as follows:

- **Analyse hypothetical examples and scenarios in relation to the application of general insurance concepts.**
- **Propose solutions and actions that are appropriate to the given context, with justification where required.**
- **Suggest possible reasons why certain actions have been chosen.**
- **Assess the implications of actions within a given scenario.**
- **Discuss the advantages and disadvantages of suggested actions, taking into account the perspectives of different stakeholders.**

Examiners will expect candidates to be able to apply the knowledge and understanding that they have developed through the study of this Core Reading to produce coherent advice and recommendations for the overall management of a general insurer.

Candidates will be expected to solve problems that may be set in novel or unfamiliar circumstances or for which there are no generally recognised solutions by:

- **drawing upon knowledge and understanding of similar products, situations and current issues**
- **applying actuarial techniques and concepts**
- **exercising judgement**
- **utilising the information provided in the question.**

In Section 1, we illustrate how to put these techniques into practice by considering an unusual product which is unlike any of the products you will have seen in Chapters 2 and 3.

Although there is significant overlap in underlying content between this exam and Subject SA3, the level of understanding expected of candidates is different. Candidates are expected to have a solid grasp of the technical aspects of general insurance work and some understanding of the broader commercial, regulatory and operational context; the non-technical elements are the greater focus of Subject SA3.

Broadly, we would expect a passing Subject SP7 candidate to be able to operate with limited supervision for routine analytical work, but would draw upon more senior expertise for complex or contentious situations.

10 Producing cashflows

In addition to producing point estimates of reserves, there is an increasing demand for actuaries to produce cashflows of future payments (usually premiums, claims and expenses) for use beyond the core reserving exercise, for example to report under different regulatory regimes. These will often be derived from the underlying core reserving projections.

10.1 Uses of cashflows

The cashflows may be needed for a number of different purposes, so it is important to consider how they will be used when selecting the assumptions and any simplifications. Some common uses of cashflows include:

- discounting of reserves, premium provisions and expense provisions
- input into asset and liability matching strategies
- estimating the impact of claims inflation on reserves through application of calendar year inflation patterns.

How the cashflows will be used may also affect the approach taken to derive them and the materiality levels for the assumptions used. This may guide you as to how granular an approach you use to splitting into lines of business when projecting the cashflows.

For example, under IFRS 17 the cashflows will directly impact the profit declared by the insurer through discounting of the liabilities and the unwinding of the discount on emerging experience. It is therefore important that these are subject to appropriate review of emerging experience in a similar way to the wider reserving assumptions.

The phrase 'unwinding the discount' refers to the difference between the present value of a future payment and the undiscounted amount payable in the future. As experience emerges, an expected cashflow that previously appeared in the accounts at a discounted value will eventually be paid as an undiscounted amount. This results in a profit (or loss) in the accounts.

IFRS 17 is discussed further in Chapter 26, Accounting methods.

10.2 Approach taken for different cashflows

The type of cashflow will impact the approach taken.

Claim payments

It is common to use a paid chain ladder approach to derive a payment pattern for gross claims using similar cohorts to the core reserving exercise.

You should consider whether this is suitable for their ultimate use. For example, if the reserving exercise is completed on an underwriting year basis this may not be suitable to use for earned reserves where accident year payment patterns are more typical.

For reinsurance recoveries, a similar approach can be taken to gross claims. However, there may be more limited data and so approximations are often used, for example, by applying a lag to the gross payment pattern depending on the type of reinsurance.

The payment pattern may also need to be adjusted depending on whether it is used to project cashflows from earned reserves or claims arising from unearned premiums.

Premium payments

The cashflow pattern for premiums could be calculated in a similar way to that for claims if premium payment triangles are available.

In other words, premium triangles can be projected using chain ladder methods. They are typically very short-tailed indeed.

Depending on materiality, approximations may be appropriate. For example, many premiums have very short payment patterns, and these could be approximated by combining the anticipated patterns of writing policies with standard payment terms on those policies.

Reinsurance premium cashflows would typically be projected in a similar way and taking account of the type of reinsurance policy, eg proportional or non-proportional.

Care needs to be taken in allowing for profit commissions or reinstatement premiums which may emerge later than other premiums or be contingent on claims.

Remember commissions are usually paid on proportional reinsurance, such as quota share or surplus treaty reinsurance, whereas reinstatement premiums are a feature of excess of loss reinsurance.

Expense payments

When projecting cashflows for expenses, a first consideration is whether the expense payments are directly related to other cashflows, for example commission may be closely related to premium cashflows, and direct claims expenses to claims cashflows. If this is the case then the same payment patterns could be used.

Again, depending on materiality, it will often be useful to split expenses into various categories with different payment patterns.

For example:

- brokerage may be assumed to follow the same payment pattern as premiums
- reinsurance (ceding) commission may be assumed to follow the same payment pattern as reinsurance premiums
- claims handling expenses may be assumed to follow the same payment pattern as the claims payments.

Market benchmarks

Often there will not be sufficient data to confidently project payment patterns. It may then be helpful to use market benchmark data for the relevant lines of business.

It is important if using market benchmarks to monitor the emerging experience to ensure these are valid approximations, particularly where these are used on lines of business that are material to the discounted provisions reported on the balance sheet.

10.3 Important considerations in producing cashflows

As noted, it is important to consider the purpose for which cashflows are being produced and to ensure the end user is aware of any limitations of the approach taken.

Aggregation level

One consideration is the level of aggregation within the cashflows that are being produced that is required by the end user.

The first dimension of aggregation is the claim cohort this applies to, eg accident, reporting or underwriting period, and also whether this is monthly, quarterly or annually. The required cohort basis may be different from that used for reserving, which may then require a separate exercise to derive patterns on this basis, or to convert the outputs.

The second dimension of aggregation is the frequency of cashflows. For example, if the modelling was done with annual development but the cashflows are required monthly, then some approximation will be required, eg through fitting a curve between the modelled development periods.

Depending on materiality, it may be sufficient to use linear interpolation instead of curve fitting to estimate intermediate points.

Claim types

Payment patterns are often derived in relation to attritional claims to avoid distortions created by large or catastrophe claims. When producing cashflows this will need to be taken into account and will often require separate payment patterns for attritional, large and catastrophe claims.

The method used to derive payment patterns for attritional claims may be less well suited to large and catastrophe claims given the limited data and heterogeneity of claims, so it may be necessary to use a different approach.

For example, if there are a small number of individually large claims, it may be useful to ask the claims team about likely payment dates. This approach is often used when modelling structured settlements where a lump sum is payable on settlement followed by a stream of future payments at a set date each year. The claims team would have a view on the likely date of settlement which would trigger the cashflows to feed into the actuarial modelling.

Periodical payment orders (PPOs) which are typically seen on large bodily injury claims in the UK and elsewhere, are an example of a structured settlement.

Market benchmark patterns may also be useful in these situations.

Limitations

It is important to ensure the end user is aware of any approximations that have been made, or the impact of modelling in a different way. This is particularly important where any approximations impact figures used within externally reported estimates.

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into your Course Notes***

We should be careful, however, when selecting appropriate rate indices because:

- Rate indices are typically only available for renewal business and therefore may not adequately allow for any differences between new and renewed business.
- Rate indices can sometimes be constructed largely based on highly subjective information (such as the underwriters' views rather than hard data).
- Rate indices will allow for changes in the attachment and limits on the policy. However these indices are often based on ILF curves, which may not fully reflect changes to claim profiles.

ILF curves are discussed in Subject SP8.

- Rate indices often fail to remove the underlying trends in the claims experience fully, leaving a residual loss ratio trend for the reserving actuary to explain.
- Rate indices often struggle to allow for changes to terms and conditions adequately.
- Where there are more material rate changes, the method used to aggregate across all policies can give materially different results (eg simple or volume weighted mean, mean or median).
- The selected rate index may be skewed by a small number of policies with above or below average rate change.

When using a rate index, it is important to understand the inflationary allowance that is included within this and whether inflation needs to be explicitly allowed for beyond the allowance within the rate index. Changes to the types of claims covered and any claim frequency trends should also be considered and allowed for. It is also important to consider whether pricing already reflects inflation the claims are likely to be subject to or if it is a less precise match. For example, reflecting an increase in the value of a total loss may not reflect the inflation in the repair costs of the same item.

Changes to commission rates over time should also be considered if the loss ratios being used are net of commission, as is common in the London Market.

As the market moves between 'soft' and 'hard' conditions, there tend to be more changes to the underlying cover. For example, as the market hardens, terms and conditions tend to tighten with deductibles being added or policies attaching at a higher level. As the market softens, these trends will typically reverse. This can make reserving challenging as the underlying cover will be changing, and rates indices often fail to fully capture the impact of the changes.



Question

Suggest what impact the following will have on claims development patterns:

- (i) looser terms and conditions
- (ii) lower deductible.

Solution

- (i) Looser terms and conditions – leads to claims arising which have different reporting and/or settlement patterns. It may also lead to more protracted claims due to litigation.
- (ii) Lower deductible – leads to a shorter claim development pattern.

6 The reserving cycle

Recent studies have also suggested the existence of a 'reserving cycle' which is highly correlated with the underwriting cycle.

This appears to show that in a soft market, incurred claims development patterns are slower to develop (or longer-tailed) than in a hard market so that an unadjusted projection can underestimate ultimate claims in a soft market (and, equivalently, overestimate them in a hard market, when insurers can afford it).

Potential reasons for this phenomenon include:

- the effect of weakened terms and conditions
- an increasing tendency to dispute claims
- a possibly less conservative approach to case reserving when results are worse.

The evidence of a reserving cycle is more noticeable for business which is already thought to be long tailed.

The initial expected loss ratio can be chosen to take account of changes in the reserving cycle as well as changes in the underwriting cycle.

This over-estimation or under-estimation of booked reserves is a decision to be made by the Board. It should not impact the actuary's best estimate, although they may wish to indicate a range of 'best estimates' within which they believe the Board's decision should lie.

The general insurer is likely to wish to flatten the reserving cycle:

- so that reserves are more accurate. This reduces the likelihood of insufficient reserves being set up in past years, which will have a detrimental impact on the ongoing business
- so that the profitability of the business can be more readily understood. Appropriate decisions can then be made as to whether to continue, contract or expand a class.