INSTITUTE AND FACULTY OF ACTUARIES

Scenario Material

15 September 2021 (am)

Subject CP3 – Communications Practice
Core Practices

INSTRUCTIONS FOR CANDIDATES

You are provided with this advance information to enable you to read and understand it in your own time, and not under examination conditions. Please note that this is an examination to test your ability to communicate technical information to a non-technical audience. It is not a test of your technical actuarial knowledge or skills. As such, any technical actuarial information or techniques needed to answer the question will be provided to you. You do not need to spend time revising other subjects or researching further detail on the topics covered in the paper.

Background

Company ABC is a life insurer writing business with the following characteristics:

- Fixed sum assured.
- Level premiums.
- The policy pays the sum assured on the death of the policyholder, or on diagnosis of a terminal illness with a life expectancy of less than 6 months.
- The shortest term available is 5 years, and the longest is 25 years.
- The youngest age at which a policy can be taken out is 16, and cover must expire before a policyholder's 70th birthday.
- Policies are sold through financial advisors.
- Medical underwriters are responsible for ensuring that the health of applicants is assessed. This is done primarily by the applicant answering questions designed by the underwriter about their health. Answers to these questions may trigger additional investigations (for example, medical tests or a request for evidence). Premiums are adjusted, where applicable, to reflect the additional risk of a claim as a result of an applicant's medical history.
- The outcome of this underwriting process can be either:
    - **accepted on standard rates** – the applicant is offered insurance at the standard insurance premiums based on their age and the term of the policy.
    - **accepted with an underwriting loading** – the applicant is offered insurance, but premiums are increased to allow for the higher probability of claiming. For example, they may be given a loading of +50%, indicating that they are 50% more likely to claim than a standard policyholder. Risk premiums (the part of the premium that covers the expected future claim) in this example would be 50% higher than the standard.
    - **declined** – the applicant is not offered insurance because the underwriting assessment indicates that the applicant does not fall within the insurer's risk appetite.
- Applicants are reminded at the application stage that disclosures they make through the underwriting process may be checked if a claim is made on the policy and, if the disclosures are inaccurate, then the claim may not be paid.

You have been provided with two extracts from Company ABC's internal documents:

1. an extract from the pricing manual, which sets out the principles to be followed when pricing new business
2. an extract from the most recent experience investigation, used in setting insurance premiums for the period 1 April 2021 to 31 March 2022.

Pricing manual

Pricing philosophy

Expected claims should be set using a central best estimate basis where possible (i.e. with an equal chance of the true claims cost being higher or lower than assumed). Where there is significant uncertainty around the best estimate, the assumption should be set slightly to the prudent end of the range of possible best estimates.

Premiums are reviewed annually to ensure that they are not only adequate to reflect the underlying risk, but also as competitive as possible.

Standard steps in the pricing process

The following basic steps are taken when determining the standard pricing for new policies:

1. The start point for the pricing is ABC's standard base mortality tables. These have been set by ABC's research team and are based on industry experience.

2. An experience analysis (Actual versus Expected analysis) is run to determine adjustments that are needed to the standard base mortality tables to reflect the actual claims experience of ABC. The following steps are completed:

    (a) Expected claims for business that has been written on standard rates are calculated for business that has been in force over the last 5 years. This is based on policyholder data and the standard base mortality tables.

    (b) Adjustments are made to the expected claims to reflect the levels of cover that are written by ABC compared to the wider market. Sum assured has been shown to be negatively correlated with the probability of a claim. Therefore, if ABC writes business that has on average a higher sum assured than the market, then the expected claims will be adjusted down.

    (c) The actual claims over the same period will be taken and adjusted to allow for Incurred But Not Reported (IBNR) and the proportion of reported claims that have not yet been paid and are likely to be declined.

    (d) The adjusted expected claims from step (b) above are then compared to the adjusted actual claims from step (c).

    (e) A factor known as the pricing multiple is calculated by comparing the actual claims to the expected claims. If actual claims are higher than expected claims, then the pricing multiple will be over 100% and vice versa.

    (f) Steps (a) to (d) inclusive are then completed for business that has been given an underwriting loading. If experience is better on business with an underwriting loading (relative to what is expected given that loading) than on business written on standard rates, the pricing multiple is adjusted to take account of this. This good experience is therefore spread across all policyholders.

3. ABC's standard mortality trends (to allow for expected future mortality improvements) and standard profit and expense margins are used with the adjusted mortality tables to derive a set of level premium rates that vary by age and term.

Experience analysis 2020

An experience analysis was run with an investigation period of 1 January 2016 to 31 December 2020. Underwriting standards have remained constant throughout the period. The results are shown below, along with an explanation of any adjustments.

Experience analysis for policies written on standard premiums

This analysis includes only those lives that have not been given an underwriting loading as a result of their disclosures during the underwriting process.

	Lives	*Amounts ($)*
Expected claims (E)	2,801	272,921,223
Adjusted expected claims (E*)	2,749	259,818,861
Actual claims (A)	2,699	258,769,014
Adjusted actual claims (A*)	2,682	257,122,666
A/E	96.4%	94.8%
A*/E*	97.6%	99.0%
Credibility	100%	100%

Experience analysis of policies with an underwriting loading

This analysis includes lives that have been given an underwriting loading as a result of their disclosures during the underwriting process. The expected claims have been increased in line with the loadings that have been applied. For example, if a policyholder has been given an underwriting loading of +100%, this implies that they are twice as likely to claim as a policyholder with no loading. The expected claims for this policyholder are therefore doubled to take account of this.

	Lives	*Amounts ($)*
Expected claims (E)	710	53,482,834
Adjusted expected claims (E*)	777	57,620,070
Actual claims (A)	514	41,488,528
Adjusted actual claims (A*)	589	41,598,307
A/E	72.4%	77.6%
A*/E*	75.8%	72.2%
Loaded lives adjustment	–4.8%	–4.9%

Pricing multiple

Calculation of the final multiple to be applied to the central mortality tables when pricing:

	Lives (%)	*Amounts (%)*
Non-loaded A*/E*	97.6	99.0
Credibility adjustment	100	100
Loaded lives adjustment	–4.8	–4.9
Final pricing multiple	92.8	94.1

Expected claims (E) – based on the exposure, the claims that the insurer expects to pay, using its standard base mortality tables before any adjustments.

Adjusted expected claims (E*) – based on the exposure, the claims the insurer expects to pay, adjusted to take account of the sum assured distribution of the lives within the exposure.

Reported actual claims (A) – the total claims that have been reported with a claim date that falls within the investigation period.

Payable actual claims (A*) – the total claims that have been reported with a claim date that falls within the investigation period with the following adjustments:

- claims that have been IBNR
- a proportion of the reported claims that are likely not to be paid (i.e. those that on investigation are found not to be valid claims).

Credibility – the significance of the result given the amount of experience data used in the investigation. A result of 100% implies that any adjustment suggested by the experience analysis to the standard table will be used in full.

Loaded lives adjustment – adjustment to the pricing multiple to determine any cross subsidy between lives that have been given an underwriting loading and those that have not, calculated using the following formula:

(Loaded A*/E* – Standard A*/E*) × Loaded E* ÷ (Loaded E* + Standard E*)

Final pricing multiple – the final adjustment to the standard base mortality tables to be used for calculating insurance premiums.

END OF SCENARIO MATERIAL