

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **Scenario Material**

11 April 2023 (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

MotoSafe is a general insurance company that specialises in writing motor insurance for individuals. It does not use any form of reinsurance.

The current marketing strategy of MotoSafe is to obtain business through:

- intermediaries such as brokers.
- direct sales via its website and telesales.

You have been provided extracts from four MotoSafe internal documents:

1. Details of data fields held on the claims database
2. Pricing approach, including details on risk and rating factors
3. Example burning cost analysis data
4. Terms of reference for the Climate Change Working Group.

Document 1:

### Claims database details

Current claims data held by MotoSafe:

- Date of claim event
- Claim status: open, closed, reopened
- Date closed (if applicable)
- Date reported
- Claim type: property damage, bodily injury, fire and theft, windscreen, other
- No-claims discount status
- Dates and amounts of payments
- Dates and estimates of amounts outstanding
- Rating factor details: policyholder age, vehicle group, estimated annual mileage, location of policyholder
- Unique claim identifier
- Policy number to link to policy information.

Document 2:

### MotoSafe pricing approach

The aim of our pricing approach is to ensure that premium rates are set at an appropriate level that reflects the risk to MotoSafe.

This is done by calculating the risk premium separately for homogeneous subsets of policyholders.

### **Risk factors and rating factors used by MotoSafe**

The risk factors associated with motor insurance, though easy to identify, are often difficult to use as rating factors.

The risk factors that are considered to be important by MotoSafe are:

- density of traffic where the vehicle is driven.
- ability of the driver.
- speed at which the vehicle is usually driven.
- ease with which the vehicle can be damaged.
- cost of repairing the vehicle.
- likelihood of theft.

All of the factors above are believed to influence the level of risk for motor insurance cover.

Ideally, these risk factors would be used as rating factors to determine the premium rate for policies. A rating factor must be measurable in an objective way and relate to the intensity of the risk. MotoSafe cannot depend on the information provided by policyholders in relation to the risk factors listed above. The policyholder may not supply an accurate assessment of their abilities and driving experience or details of vehicle usage.

As we are unable to use these risk factors to calculate premium rates, we have created a set of rating factors that are proxies for the risk factors. The rating factors used by MotoSafe are:

- age of the vehicle.
- occupation of the policyholder and other drivers listed as users of the insured vehicle.
- age of policyholder and other drivers.
- vehicle category (labelled as A to T, and dependent on make and model of vehicle).
- any modifications to the vehicle.
- estimated annual mileage.
- location (based on the address where the insured vehicle is kept).
- where the vehicle is kept overnight: road, driveway or garage.

## **Risk premium calculation**

To ensure a fair price is charged, each policy is categorised into a rating cell. The objective of this is to group risks that have homogeneous characteristics.

MotoSafe uses a burning cost approach to calculate risk premiums. Based on historic data, this method allows the rating of portfolios of similar risks. This method is relatively simple and quick to perform, but there is a need to adjust the historical data to allow for claims cost inflation and Incurred But Not Reported (IBNR) claims to ensure meaningful results. It also relies on the successful grouping of risks to avoid cross-subsidy where possible. Typically, the burning cost is calculated using data from the previous 5-year period.

The burning cost is defined as the actual cost of claims expressed as an annual rate per unit of exposure:

$$\text{Burning cost} = (\Sigma \text{ claims}) \div \text{total exposed to risk}$$

The measure of exposure used by MotoSafe is the vehicle year, which is equivalent to one vehicle insured for 1 year, or two vehicles insured for 6 months each, etc.

The following information is needed to perform a burning cost analysis:

- Historic exposure information (start and end dates of policy is needed to calculate exposure)
- Data on past claims (number of claims and value of claims)
- Assumption on claim cost inflation (current assumption is 4%)
- Reporting lag (the number of days between the date of the claim event and the date it is reported to the insurer).

The following steps are taken by MotoSafe to calculate the burning cost and determine an appropriate risk premium.

### **Step 1: Revalue losses to allow for past inflation**

In order to compare losses from different years, it is important to revalue them using the claims cost inflation assumption.

### **Step 2: Aggregate losses by policy year**

The total number and amount of individual losses are aggregated by policy year. The allocation to each policy year is based on the current policy definition.

### **Step 3: Make adjustments for IBNR**

If appropriate, adjustments are made to the total losses for each year to allow for the possibility of new claims being reported (the IBNR).

### **Step 4: Make adjustments for changing risk profile**

If necessary, adjustments are made to reflect changing risk profile.

### **Step 5: Calculate the burning cost**

The burning cost is calculated as the cost of claims expressed as an annual rate per unit of exposure.

There are some limitations to the burning cost approach, which the pricing team has acknowledged. The main issue is that the approach is based solely on retrospective data with no attempt to model future risk. Having reviewed the approach and compared past premiums with actual incurred losses, the team is satisfied that this method is the most appropriate for calculating the risk premium.

### **Office premium calculation**

The risk premium calculated by the burning cost approach gives the expected claims cost. We make adjustments to this to calculate the office premium.

Required adjustments:

- Loading for expenses that includes policy administration costs, claims handling costs and overheads
- Loading for commission
- Loading for tax
- Profit loading
- Allowance for investment return.

Document 3:

Example burning cost analysis data

Monetary figures shown in the tables below have been revalued and adjusted, allowing for past inflation to 2022 monetary terms.

Burning cost analysis data for the whole portfolio grouping rather than a risk group:

<i>Policy year</i>	<i>Number of claims</i>	<i>Exposure (vehicle years)</i>	<i>Total losses (£)</i>
2022	3,118	52,101	9,609,676
2021	2,847	47,594	8,404,344
2020	3,481	49,857	9,882,559
2019	3,768	51,063	10,064,328
2018	3,210	48,777	8,503,290
<b>Total</b>	<b>16,424</b>	<b>249,392</b>	<b>46,464,197</b>

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**Burning cost      £186.31**

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Burning cost analysis data for a subset of the portfolio: policies in vehicle categories Q, R and S:

[**Note:** Vehicle category: Q = Electric vehicle, R = Hybrid electric vehicle, S = Plug-in hybrid electric vehicle.]

<i>Policy year</i>	<i>Number of claims</i>	<i>Exposure (vehicle years)</i>	<i>Total losses (£)</i>
2022	512	8,450	1,577,984
2021	289	4,997	853,128
2020	106	1,602	300,934
2019	65	919	173,615
2018	48	683	127,152
<b>Total</b>	<b>1,020</b>	<b>16,651</b>	<b>3,032,813</b>

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**Burning cost      £182.14**

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Document 4:

Climate Change Working Group: Terms of reference

**Status**

This is a working group of MotoSafe. It may make recommendations, but it is not a decision-making body.

**Membership**

All members of the working group are employees of MotoSafe. Membership is open to all employees, with the only requirement being an interest in the challenges climate change presents to the company, the employees and the customers of MotoSafe.

**Attendance**

Members will attend to support the working group, as necessary.

The working group may invite other parties to attend and contribute to meetings as it decides.

**Meetings**

The working group will fix its own timetable for meetings.

Regular update reports will be presented to the Environmental, Social and Governance (ESG) committee of MotoSafe.

**Role of the working group**

The board and ESG committee of MotoSafe define the company's strategy relating to ESG matters. The working group will support this by reviewing and suggesting practices and initiatives relating to environmental matters. 'Environmental matters' refers to: the company's impact on the natural environment and its response to the challenge of climate change including greenhouse gas emissions, resource consumption, renewable energy, biodiversity and habitat, waste creation and management and other environmental impacts of the company.

The working group will:

- identify steps that may be taken by MotoSafe to work towards its commitment to achieving net-zero carbon status by 2030.
- consider key issues and emerging evidence on climate change.
- suggest projects and initiatives that support the environmental aspect of the ESG strategy.
- promote good practice and engagement in sustainability among staff.

The current members of the working group are:

L. Malde – Graphic Designer, Marketing.

D. Telford – System Architect, IT.

B. Chandi – Team Leader, Complaints.

A. Wells – Customer Service Advisor, Claims.

H. Ghoorbin – Business Partner, HR.

**END OF SCENARIO MATERIAL**