



Institute
and Faculty
of Actuaries

EXAMINERS' REPORT

CM2 - Financial Engineering and Loss
Reserving

Core Principles

Paper B

September 2022

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

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

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

Sarah Hutchinson
Chair of the Board of Examiners
December 2022

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

The aim of Subject CM2 is to develop the necessary skills to construct asset liability models, value financial derivatives and calculate reserves for insurance or guarantees. These skills are also required to communicate with other financial professionals and to critically evaluate modern financial theories.

The marking approach for CM2 is flexible in the sense that different answers to those shown in the solution can earn marks if they are relevant and appropriate. Marks for the methodology are also awarded including marks for using the right method even if an error in an earlier part of the question prevents the final answer from being correct. The marking focusses on rewarding candidates' understanding of the concepts, including their ability to articulate arguments clearly.

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

Candidates who scored well were those who were able to set out their workings clearly and follow through later question parts even if they had made a mistake in an earlier part. This allowed them to score marks for their method even if their final answers were not correct.

This paper was answered fairly well, with slightly higher average marks than the A paper. Q4 on valuing a guarantee using stochastic projections proved to be the most challenging question on the paper – this was a topic that is not often examined although it is within the syllabus for this subject, but many candidates still tackled it quite well.

Candidates should note that showing their full calculations is vital in the B paper, including explaining any goal seek or other methods used. Any answers without workings scored zero marks.

C. Pass Mark

The Pass Mark for this exam was 58
1301 presented themselves and 528 passed.

Solutions for CM2B September 2022 Please refer to Excel file

Q1

[Total 23]

Most candidates answered well this question. In part (iii), many candidates did not make enough distinct points for full marks to be awarded.

It was also important, in part (iii), to link points to the specific question, so answers that discussed pooling of resources in general terms did not score as highly as more specific answers.

Q2

[Total 28]

Candidates performed well in parts (i), (ii) and (iii), proving to be quite straightforward. Calculating the downside semi-variance in part (iv) proved to be a little more difficult..

In part (v), some candidates calculated the utility of expected wealth rather than the expected utility of wealth; this does not make sense as a concept and scored no marks.

In part (vi) the question asked for the fee to the nearest \$250 and many candidates did not adapt their answer to this.

Q3

[Total 23]

Full marks were not awarded when candidates did not make zero an absorbing state in the reserve projections. It should not be possible for the reserve to fall to zero then recover to a positive value.

Some candidates answered parts (ii) and (iv) by only typing numbers into the orange cells, but this scored no marks without calculations or a description of the reasoning. Many candidates also did not make enough distinct points for the marks on offer in part (v).

Q4

[Total 26]

Candidates generally did not perform well in question 4. Many candidates projected the loan and property values correctly but slipped up when calculating the value of the guarantee.

In part (iv), candidates needed to identify the median row in the projection then plot it on a chart, this is not the same as plotting the median property value in each year. The remainder of the question was answered well, though some candidates noted a guaranteed value of zero in part (vii) with no calculations or explanation, hence scored no marks.

[Paper Total 100]

END OF EXAMINERS' REPORT



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