Advanced Topics in General Insurance Exam

Spring 2021

Important Exam Information:

Exam Registration	Candidates may register online or with an application.
Order Study Notes	There is no study note package for this examination.
Introductory Study Note	The Introductory Study Note has a complete listing of all readings as well as errata and other important information.
Case Study	There is no case study for this examination.
Past Exams	Prior exams are available at this link. Past exams from 2000-present for other SOA exams are also available at that location. Prior exam questions for the excess of loss coverages and retrospective rating topic to 2015 can be found at the link for the General Insurance Introduction to Ratemaking and Reserving exam.
Updates	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

1. **Topic: Basic Stochastic Reserving**
Learning Objectives
The candidate will understand how to use basic loss development models to estimate the standard deviation of an estimator of unpaid claims.
Learning Outcomes
The candidate will be able to: a) Identify the assumptions underlying the chain ladder estimation method.   b) Test for the validity of these assumptions.   c) Identify alternative models that should be considered depending on the results of the tests.   d) Estimate the standard deviation of a chain ladder estimator of unpaid claims.   e) Apply a parametric model of loss development.   f) Estimate the standard deviation of a parametric estimator of unpaid claims.
Resources
- Mack, T., "Measuring the Variability of Chain Ladder Reserve Estimates," Casualty Actuarial Society Forum, Spring 1994   This article may be accessed at **www.casact.org** through the following navigation: - Publications   - E-Forum   - 1994 Spring Forum   - Measuring the Variability …   - Venter, G.G., "Testing the Assumptions of Age-to-Age Factors," PCAS LXXXV, 1998   This article may be accessed at **www.casact.org** through the following navigation: - Publications   - Yearbook/Proceedings   - 1998 Proceedings of the Casualty Actuarial Society, Volume LXXXV   - Testing the Assumptions …   - Clark, D.R., "LDF Curve Fitting and Stochastic Reserving: A Maximum Likelihood Approach," Casualty Actuarial Society Forum, Fall 2003   This article may be accessed at **www.casact.org** through the following navigation: - Publications   - E-Forum   - 2003 Fall Forum   - LDF Curve Fitting …

2. **Topic: Risk Margins for Unpaid Claims**
Learning Objectives
The candidate will understand the considerations in selecting a risk margin for unpaid claims.
Learning Outcomes
The candidate will be able to: a) Describe a risk margin analysis framework.   b) Identify the sources of uncertainty underlying an estimate of unpaid claims.   c) Describe methods to assess this uncertainty.
Resources
• Marshall, K., Collings, S., Hodson, M., and O'Dowd, C., "A Framework for Assessing Risk Margins," Institute of Actuaries of Australia 16th General Insurance Seminar, 9-12 November 2008, Coolum, Australia   http://www.actuaries.asn.au/Library/Framework%20for%20assessing%20risk%20margins.pdf

3. **Topic: Excess of Loss Coverages and Retrospective Rating**

Learning Objectives

The candidate will understand excess of loss coverages and retrospective rating.

Learning Outcomes

The candidate will be able to:

a) Explain the mathematics of excess of loss coverages in graphical terms.

b) Calculate the expected value premium for increased limits coverage and excess of loss coverage.

c) Explain and calculate the effect of economic and social inflationary trends on first dollar and excess of loss coverages.

d) Explain retrospective rating in graphical terms.

e) Explain Table M and Table L construction in graphical terms.

f) Explain the limiting case in retrospective rating.

Resources

- Lee, Y., "The Mathematics of Excess of Loss Coverages and Retrospective Rating–A Graphical Approach," , PCASLXXV, 1988

  This article may be accessed at www.casact.org through the following navigation:
    - Publications
      - Yearbook/Proceedings
        - 1988 Proceedings of the Casualty Actuarial Society, Volume LXXV
          - The Mathematics of Excess of Loss Coverages…

4. **Topic: Reinsurance Pricing**

Learning Objectives

The candidate will understand how to apply the fundamental techniques of reinsurance pricing.

Learning Outcomes

The candidate will be able to:

    a)   Calculate the price for a proportional treaty.

    b)   Calculate the price for a property per risk excess treaty.

    c)   Calculate the price for a casualty per occurrence excess treaty.

    d)   Apply an aggregate distribution model to a reinsurance pricing scenario.

    e)   Describe considerations involved in pricing property catastrophe covers.

Resources

- Clark, D.R., "Basics of Reinsurance Pricing," Actuarial Study Note, 2014

5. Topic: Underwriting Profit Margins

Learning Objectives

The candidate will understand methodologies for determining an underwriting profit margin.

Learning Outcomes

The candidate will be able to:

a) Calculate an underwriting profit margin using the target total rate of return model.

b) Calculate an underwriting profit margin using the capital asset pricing model.

c) Calculate an underwriting profit margin using the risk adjusted discount technique.

d) Allocate an underwriting profit margin (risk load) among different accounts.

Resources

- D'Arcy, S.P., and Dyer, M.A., "Ratemaking: A Financial Economics Approach," PCAS LXXXIV, 1997 (excluding Sections 7 and 8)
  This article may be accessed at **www.casact.org** through the following navigation:
    - Publications
      - Yearbook/Proceedings
        - 1997 Proceedings of the Casualty Actuarial Society, Volume LXXXIV
          - Ratemaking: A Financial …

- Mango, D.F., "An Application of Game Theory: Property Catastrophe Risk Load," PCAS LXXXV, 1998
  This article may be accessed at **www.casact.org** through the following navigation:
    - Publications
      - Yearbook/Proceedings
        - 1998 Proceedings of the Casualty Actuarial Society, Volume LXXXV
          - An Application of Game …