Advanced Topics in General Insurance Exam
Spring 2023

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 to the current syllabus.
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

  This article may be accessed at [www.casact.org](http://www.casact.org) through the following navigation:
  - Publications & Research
  - CAS Papers -> E-Forum
  - Archives
  - CAS research database
  - CAS Forum - 1994 Spring Volume 1 (pages 101-182)...

  This article may be accessed at [www.casact.org](http://www.casact.org) through the following navigation:
  - Publications & Research
  - Browse research -> [Author Last Name = Venter, Year Published = 1998] -> Search
  - Testing the Assumptions of Age-To-Age Factors

  This article may be accessed at [www.casact.org](http://www.casact.org) through the following navigation:
  - Publications & Research
  - CAS Papers -> E-Forum
  - Archives
  - CAS research database
  - CAS Forum - 2003 Fall Forum (pages 41-91)
## 2. Topic: Development Analysis for Excess Limits and Layers

### Learning Objectives

The candidate will understand the considerations in the development of losses for excess limits and layers.

### Learning Outcomes

The candidate will be able to:

- a) Estimate ultimate claims for excess limits and layers.
- b) Understand the differences in development patterns and trends for excess limits and layers.

### Resources

  - Appendix G
  
  [Candidates may also use the Appendix I of the 2019 supplement to the First Edition]
3. **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**

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

<table>
<thead>
<tr>
<th>Learning Objectives</th>
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<tbody>
<tr>
<td>The candidate will understand excess of loss coverages and retrospective rating.</td>
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<tr>
<th>Learning Outcomes</th>
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<tbody>
<tr>
<td>The candidate will be able to:</td>
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<tr>
<td>a) Explain the mathematics of excess of loss coverages in graphical terms.</td>
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<td>b) Calculate the expected value premium for increased limits coverage and excess of loss coverage.</td>
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<tr>
<td>c) Explain and calculate the effect of economic and social inflationary trends on first dollar and excess of loss coverages.</td>
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<tr>
<td>d) Explain retrospective rating in graphical terms.</td>
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<tr>
<td>e) Explain Table M and Table L construction in graphical terms.</td>
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<td>f) Explain the limiting case in retrospective rating.</td>
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<td>g) Estimate the premium asset for retrospectively rated policies for financial reporting.</td>
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5. Topic: Reinsurance

Learning Objectives

The candidate will understand several aspects of reinsurance including the various types of reinsurance, the issues encountered when performing a reserve analysis on reinsurance, how to apply the fundamental techniques of reinsurance pricing and risk transfer testing of reinsurance contracts.

Learning Outcomes

The candidate will be able to:

a) Understand the types of reinsurance and key reinsurance terms.
b) Explain the principal functions of reinsurance.
c) Analyze and describe the various types of reinsurance.
d) Understand the issues encountered when applying loss development methods to reinsurance.
e) Calculate the price for a proportional treaty.
f) Calculate the price for a property per risk excess treaty.
g) Calculate the price for a casualty per occurrence excess treaty.
h) Apply an aggregate distribution model to a reinsurance pricing scenario.
i) Describe considerations involved in pricing property catastrophe covers.
j) Understand the application of a reinstatement premium.
k) Test for risk transfer in reinsurance contracts.

Resources

  - Chapter 10: A Reinsurance Primer
  [Candidates may also use Appendix H of the 2019 Supplement to the First Edition, 2013]
- Reinsurance Sections from *Fundamentals of General Insurance Actuarial Analysis*
  This article may be accessed at [https://variancejournal.org/](https://variancejournal.org/) through the following navigation:
  - Archives -> research database
  - research database
    - Browse research [Author Last Name = Brehm, Publication = Variance]
      - Then click on the pdf link
6. **Topic: Specialized Ratemaking Topics**

<table>
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<tr>
<td>The candidate will understand and apply specialized ratemaking techniques.</td>
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<td>The candidate will be able to:</td>
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<tr>
<td>a) Price for deductible options and increased limits.</td>
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<tr>
<td>b) Develop rates for claims made contracts.</td>
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<td>c) Understand and apply techniques for individual risk rating.</td>
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<td>d) Understand and apply techniques for self-insured funding allocations.</td>
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<tbody>
<tr>
<td>o Chapter 34: Actuarial Pricing for Deductibles and Increased Limits</td>
</tr>
<tr>
<td>o Chapter 35: Claims-Made Ratemaking</td>
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<tr>
<td>o Chapter 36: Individual Risk Rating and Funding Allocation for Self-Insurers</td>
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<tr>
<td>[Candidates may also use First Edition, 2013 (Chapters 33, 34 and 35)]</td>
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# 7. Topic: Game Theory and Catastrophe Risk Loads

## Learning Objectives

The candidate will understand the application of game theory to the allocation of risk loads.

## Learning Outcomes

The candidate will be able to:

a) Allocate a risk load among different accounts.

## Resources

  
  This article may be accessed at [www.casact.org](http://www.casact.org) through the following navigation:

  - Publications & Research
    - Browse research -> [Author Last Name = Mango, Year Published = 1998] -> Search
    - An Application of Game Theory: Property Catastrophe Risk Load