

# GI FREU Model Solutions

## Spring 2015

### 1. Learning Objectives:

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

### Learning Outcomes:

- (2b) Understand and apply the elements of the NAIC RBC formula.
- (2e) Understand the development and principles of solvency regulation, including that in the U.S., Canada and the E.U.
- (2h) Compare different solvency standards.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 12 (Solvency Monitoring)

Insurance Regulation, The Institutes

- Chapter 11 (Solvency Regulation)
- Chapter 12 (Insolvency Regulation)

### Solution:

- (a) Compare the following types of regulatory action that may be taken by a state department of insurance:
  - (i) Mandatory corrective action
  - (ii) Administrative supervision

Mandatory corrective action is when an insurance commissioner orders an insurer domiciled in the state to take specified actions to improve its financial condition.

Administrative supervision is when the insurance commissioner seeks court authority to take formal control of the insurer's management, with the goal of rehabilitating the insurer.

Normally mandatory corrective action is attempted first. If these measures fail, then administrative supervision is usually attempted.

## 1. Continued

- (b) Describe two situations that can lead to a special association examination.

**Commentary on Question:**

*Only two of the three situations listed in the model solution were required for full credit.*

- The zone examiners' written reports indicate that the examination by the insurer's state of domicile is inadequate.
- The domiciliary state is reluctant to schedule an examination, although IRIS results or other information indicates the need to do so.
- A state in which an insurer is licensed requests a special association examination.

- (c) Describe two criticisms of this charge and the response to each criticism.

**Commentary on Question:**

*Only two of the three criticisms (including the response to the criticism) listed in the model solution were required for full credit.*

CRITICISM: Reinsurance is a primary tool for reducing risk; a high risk charge (10%) may serve as a disincentive to utilizing reinsurance to reduce risk.

RESPONSE: Credit risk charge at 10% is lower than most reserving risk charges.

CRITICISM: The reinsurance charge does not depend on the quality of the reinsurers.

RESPONSE: The NAIC did not want to become a rating agency for reinsurers.

CRITICISM: The reinsurance charge does not take into account reinsurance recoverables that are secured.

RESPONSE: Collateralization is normally only obtained from unauthorized reinsurers. Reducing the charge on collateralized reinsurance might produce lower capital requirements for unauthorized reinsurance vs. authorized reinsurance.

## 1. Continued

- (d) Compare the treatment of earthquake risk among the following regulatory capital standards:
- (i) NAIC RBC formula after including the proposals from the NAIC Solvency Modernization Initiative
  - (ii) Solvency II Standard Formula, Solvency Capital Requirement (SCR)
  - (iii) Canadian Minimum Capital Test (MCT)

The RBC Solvency Modernization Initiative proposal includes earthquake (EQ) risk as its own risk charge in the formula within the square root. The charge is based on a 1-in-100 year event from a commercially available model.

SCR includes EQ risk within the natural catastrophe calculation of risk. It is calculated by region and is correlated with other natural catastrophes.

MCT includes EQ risk with an EQ risk charge based upon a sliding average of the company's probable maximum loss at 1-in-250 years and 1-in-500 years.

## **2. Learning Objectives:**

1. The candidate will understand the elements of financial reporting for general insurance companies.
  
4. The candidate will be able to describe the current and historical regulatory environment.

### **Learning Outcomes:**

- (1b) Understand and compare different financial reporting standards for general insurers including: U.S. Statutory Account Principles (SAP), U.S. Generally Accepted Accounting Principles (GAAP), Canadian Generally Accepted Accounting Principles (CGAAP), Solvency II and International Financial Reporting Standards (IFRS).
  
- (1c) Describe the elements of the NAIC Annual Statement.
  
- (1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.
  
- (4i) Understand the regulation of reinsurance.

### **Sources:**

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 6 (Schedule F, Statutory Credit for Reinsurance)
- Chapter 8 (Notes to Financial Statements)
- Chapter 14 (Overview of the General Insurance Statement of Actuarial Opinion)

Mayer Brown, “Understanding the New Financial Reform Legislation: The Dodd-Frank Wall Street Reform and Consumer Protection Act”

### **Solution:**

- (a) Compare the treatment of uncollectible reinsurance in U.S. statutory accounting and U.S. GAAP.

U.S. statutory accounting:

The Schedule F fixed formula provision represents a minimum bound for uncollectible reinsurance. If the insurer’s best estimate of uncollectible reinsurance is larger than the provision, the insurer’s best estimate is the provision for reinsurance.

U.S. GAAP:

The insurer uses its best estimate of uncollectible amounts as offsets to the receivables.

## 2. Continued

- (b) Describe the purpose of Note 23D, Uncollectible Reinsurance, in the NAIC Annual Statement Notes to Financial Statements.

Note 23D discloses uncollectible reinsurance written off during the past year. It is a retrospective disclosure of reinsurance collectibility.

- (c) State what is required from the appointed actuary regarding reinsurance collectibility in the Statement of Actuarial Opinion.

**Commentary on Question:**

*Information included in italics in the model solution was not required for full credit and is only included for completeness.*

The Appointed Actuary comments on reinsurance collectibility and its effect on loss and loss adjustment expense reserves. The actuary is to consider the following to comment on uncollectible reinsurance: information from management on any actual collectibility problems, financial ratings given to the reinsurers and results from Schedule F (*Schedule F aging schedule and indications of regulatory action on reinsurance recoverables on paid losses over 90 days past due*).

- (d) Compare the Schedule F Provision for Reinsurance from a certified unauthorized reinsurer and a non-certified unauthorized reinsurer.

**Commentary on Question:**

*The model solution is an example of the type of response required for full credit. Alternative full credit responses are possible. For example, the response for certified unauthorized reinsurer could be “the provision is same as that for slow-paying authorized reinsurers, except for the collateral requirement: 20% for slow-paying authorized reinsurers and from 0% to 100% for certified reinsurers, depending on the state rating for the financial strength of the reinsurer.”*

Certified unauthorized reinsurer: The provision for reinsurance is in Schedule F, Part 6 and required collateral varies by financial strength rating of the reinsurer (0 for most secure and 1.0 for vulnerable).

Non-certified unauthorized reinsurer: The provision for reinsurance is in Schedule F, Part 5 and has three parts: (i) 100% of unsecured total recoverables, (ii) 20% of overdue loss recoverables, and (iii) 20% of amounts in dispute.

## 2. Continued

- (e) Identify the purpose of the FIO's power to preempt state regulatory measures.

The Dodd-Frank Act authorizes the FIO to preempt state laws if such laws conflict with the objectives of certain international insurance agreements.

- (f) Describe the preconditions for the FIO to implement preemption authority.

Prior to preemption, the FIO must:

- issue a notice of potential inconsistency to the appropriate state regulator;
- give interested parties an opportunity to comment; and
- establish a reasonable time for the notice to become effective.

### **3. Learning Objectives:**

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.
3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

### **Learning Outcomes:**

- (2g) Demonstrate knowledge of ORSA and its implementations.
- (3a) Describe, interpret and apply the applicable Standards of Practice.

### **Sources:**

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 12 (Solvency Monitoring)

NAIC, "NAIC Own Risk and Solvency Assessment (ORSA) Guidance Manual"

IAA, "International Standard of Actuarial Practice 1, General Actuarial Practice"

### **Solution:**

- (a) Explain what is required of you for the ORSA Summary Report regarding the Board's prescribed assumption.

#### **Commentary on Question:**

*The model solution is an example of the level of detail required for full credit.*

The ISAP 1 requirement for use of prescribed assumptions and methodology depends on whether or not I support its use.

If I support its use, I disclose in the report that the company prescribed it and that I support it.

If I do not support it, it then depends on (i) if I believe it conflicts with the purpose of the report or (ii) if it is due to my not being able to judge the appropriateness of its use. (i) does not apply here. In the case of (ii) ISAP 1 requires disclosure in the report that the company prescribed the methodology, and the reason why the company, rather than I as the actuary, set the assumption.

- (b) Describe one advantage and one disadvantage of the selected method.

### 3. Continued

**Commentary on Question:**

*The model solution is an example of a full credit response. There exist other advantages and disadvantages. Also note, in the model solution under “Advantage,” the statistic TVaR is included. This is just one example. Any appropriate statistic from stochastic modeling, such as standard deviation or economic capital at different levels of confidence, would have been accepted.*

Advantage: Stochastic modeling will provide key statistics such as TVaR. These statistics are not provided through deterministic stress tests or factor-based analysis and are useful statistical measures for risk management.

Disadvantage: Stochastic modeling is more complex than deterministic methods.

- (c) Identify two examples from each of the four considerations listed.

**Commentary on Question:**

*The model solution is an example of a full credit response. There exist other examples for each of the considerations.*

- (i) Cash flow basis, balance sheet basis
- (ii) Credit, insurance
- (iii) X% of NAIC RBC, Y% TVaR
- (iv) Tail correlation, dependency structure



#### 4. Learning Objectives:

3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

#### Learning Outcomes:

- (3a) Describe, interpret and apply the applicable Standards of Practice.
- (3b) Describe, interpret and apply the responsibilities of the actuary with respect to the Statement of Actuarial Opinion and the Actuarial Report.
- (3d) Describe and apply the concept of materiality.

#### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 11 (Measuring Insurer Financial Strength)
- Chapter 14 (Overview of the General Insurance Statement of Actuarial Opinion)

AAA, Committee on Property and Liability Financial Reporting, “A Public Policy Practice Note, Statements of Actuarial Opinion on Property and Casualty Loss Reserves”

Actuarial Standards Board, Actuarial Standard of Practice No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves

#### Solution:

- (a) Identify two important considerations that you should address prior to accepting the role.

#### Commentary on Question:

*There exist a number of important considerations. The model solution includes four important considerations. The list is not exhaustive. Only two important considerations were required for full credit.*

- You must determine if you meet the qualifications to sign opinions, both for basic and continuing education.
- You must review and ensure you are familiar with the Code of Conduct / AS Instructions / SAO Instructions/ ASOPs.
- Review applicable state laws and guidance.
- You should check to make sure that Smallish has complied with the statutory requirements for changing actuaries.

## 4. Continued

- (b) Compare the use of an internal Appointed Actuary and an external Appointed Actuary. Include in your comparison one advantage and one disadvantage for each.

**Commentary on Question:**

*The model solution is an example of a full credit response. There exist many advantages and disadvantages for both external and internal Appointed Actuaries.*

- Internal-advantage: cost savings
  - Internal-disadvantage: may not be viewed as independent
  - External-advantage: independence
  - External-disadvantage: less in-depth knowledge of operations
- (c) Describe the three documents that the Appointed Actuary must prepare for Smallish, including the required timing for each document.
1. Statement of Actuarial Opinion (SAO) - filed with the Annual Statement (AS) on or before March 1.
  2. Actuarial Opinion Summary (AOS) - filed separately from the AS on or before March 15.
  3. Actuarial Report- on or before May 1.
- (d) Describe your responsibility as Appointed Actuary with respect to the results of the three failed NAIC IRIS reserve tests.
- Disclose in the SAO that Smallish fails the IRIS tests.
  - Provide briefly in the SAO and more fully in the Actuarial Report an explanation that delves into the reasons for the test results, not just repeating the arithmetic of the test.
- (e) Describe your responsibility as the Appointed Actuary regarding this shift to deposit accounting for the financial reinsurance.
- There is no requirement for the Appointed Actuary (AA) to double-check the conclusions of the auditor and management as to the nature of the reinsurance; but, if the AA believes that the classification is incorrect, further investigation is necessary.
  - Disclose in the SAO and the Actuarial Report the existence and details of the financial reinsurance, making sure that the financial reinsurance does not decrease your reserve estimate. In other words, your estimate should be gross of the financial reinsurance.

## 5. Learning Objectives:

4. The candidate will be able to describe the current and historical regulatory environment.

### Learning Outcomes:

- (4a) Describe the functions of key regulatory bodies in the U.S. including the NAIC and SEC.
- (4b) Describe and interpret the current state of general insurance regulation in the U.S. and its development.

### Sources:

Insurance Regulation, The Institutes

- Chapter 2 (Development of Insurance Regulation)
- Chapter 3 (Federal and Other Influences on Insurance Regulation)
- Chapter 5 (State Department of Insurance Operations)
- Chapter 6 (Insurer Formation, Licensing, and Marketing Regulation)

Vaughan, T., "The Economic Crisis and Lessons from (and for) U.S. Insurance Regulation"

### Solution:

- (a) Describe a condition of the McCarran-Ferguson Act (1945) that must be met by a state to remain the primary regulator of the business of insurance. Include in your description any exceptions to this condition.

The Sherman, Clayton, and other federal Acts apply to the business of insurance only if the states are not regulating the activities described in these acts. Two exceptions are:

1. The Sherman Act applies to insurers' antitrust activities (state legislation will not supersede federal antitrust authority).
  2. A federal law that applies exclusively to the insurance industry, as opposed to business in general, supersedes any state regulation in the areas addressed by the federal legislation.
- (b) Describe the issues GLB addressed with respect to state regulation of insurance.

### Commentary on Question:

*GLB addressed a number of issues. The model solution includes four issues and represents a full credit response. There are other issues addressed by GLB that are not included in the model solution that would be acceptable as part of a full credit response.*

## 5. Continued

- GLB arose due to an increase in affiliations between banks and insurers. Traditionally, both the federal government and the states regulated banking while states regulated insurance.
  - GLB was an attempt to modernize regulation of the financial services industry.
  - GLB clarifies that each segment of the financial services business is regulated separately.
  - GLB prohibits state actions that would prevent bank-related firms from selling insurance on the same basis as insurance producers.
- (c) Describe two reasons there exists substantial uniformity of insurance regulation among the states.

**Commentary on Question:**

*There are a number of valid reasons for substantial uniformity. The model solution is one example of a full credit response.*

- State regulators established the National Association of Insurance Commissioners (NAIC) to engage in cooperative activity. The NAIC produces model acts that most states adopt (with some modification).
  - Under the NAIC's accreditation program, states undergo an evaluation of laws and regulations to determine if the state meets accreditation standards. There is peer pressure among the states to be accredited by the NAIC and have effective regulations.
- (d) Explain how the duplicative costs of state insurance regulation may not be inefficient when compared to a single system of federal regulation.

**Commentary on Question:**

*The model solution is an example of a full credit response.*

Having many state regulators, as opposed to one federal regulator, oversee insurance regulation does increase the direct costs of regulation but may reduce the total cost of regulation. This is due to the fact that having duplicative state reviews may be more effective than a single federal review in detecting insurers in financial difficulty and preventing their insolvency. Thus, the increase in direct costs may be more than offset by the reduction in the cost of insolvencies.

## 5. Continued

- (e) Select one system for filling the position of insurance commissioner and provide for your selection:
- (i) an argument in favor of it;
  - (ii) an argument against it; and
  - (iii) a rebuttal to the argument against it noted in (ii).

**Commentary on Question:**

*Either system can be selected. Credit is given for the arguments in favor, against and the rebuttal. The following is an example of a full credit response where the selection was a system for an appointed commissioner.*

I select the system whereby the insurance commissioner is appointed.

- (i) An appointed commissioner may be more likely to have the necessary knowledge and experience in the business of insurance for the position and is less likely to be swayed by public opinion than an elected one.
  - (ii) An appointed insurance commissioner might be inclined to yield to the interests of those responsible for the appointment whereas an elected commissioner is not obligated to any particular group or special interest.
  - (iii) An elected commissioner may feel obligated to individuals and groups that funded his or her campaign.
- (f) Describe two other reasons that may cause financial regulators to fail in their duty of effective regulation.
1. Regulatory forbearance: Failure to take prompt and stringent action in the face of a potentially troubled firm. This can be due to the regulator hoping that the issue resolves itself because regulatory actions take time and resources and may face objections.
  2. Regulatory capture: This is the tendency for regulators to take the mindset of an interest group because of the interest group's influence or political interference.

## 6. Learning Objectives:

5. The candidate will be able to understand tort law and insurance law with respect to its impact on the general insurance industry.

### Learning Outcomes:

- (5a) Describe and interpret the key elements of tort law and the underlying principles of insurance law.

### Sources:

Excerpts from Business Law for Insurance Professionals, Institutes Custom Publishing, Assignment 3 (The International Legal Environment)

### Solution:

- (a) Describe two types of corporate tax structures that are used in tax havens other than a system of no corporate taxes.

#### Commentary on Question:

*The model solution includes three types. Only two types were required for full credit.*

- Low or minimal taxes on all corporate income
  - No taxes on foreign income, taxes only on locally derived income.
  - Special corporate tax concessions to attract foreign corporations (e.g., tax exemptions)
- (b) Describe two financial considerations, other than taxation, that should be accounted for when deciding to operate a subsidiary in a different country.

#### Commentary on Question:

*There exist a number of financial considerations. The model solution includes three considerations. The list is not exhaustive. Only two considerations were required for full credit.*

- Currency and Foreign Exchange Markets: Sales, profits, and investments increase or decrease in value simply by changes in currency values.
- Accounting Standards: Reconciliation may be required to connect Country A's accounting standards to Country B's.
- Prices/inflation: One needs to consider the costs of doing business in a different country including labor and all expenses.

## 6. Continued

- (c) Describe two non-financial considerations that should be accounted for when deciding to operate a subsidiary in a different country.

**Commentary on Question:**

*There exist a number of non-financial considerations. The model solution includes three considerations. The list is not exhaustive. Only two considerations were required for full credit.*

- **Language:** One must determine if there are language barriers in Country B such as with interpretation of contracts, advertising, and warranties.
  - **Culture:** Differences in culture between Country A and Country B can present a challenge in things like manners, body language, religion, family life and gender roles.
  - **Physical Distance:** Will the location of Country B vs. Country A create travel and communication challenges?
- (d) Describe the legal power used by Country B to acquire SOI's property for public use.

**Eminent Domain:** Government's power to confiscate private property for public use, usually with compensation paid to the owner.

## 7. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

### Learning Outcomes:

- (1a) Understand and apply the concepts of insurance accounting.
- (1b) Understand and compare different financial reporting standards for general insurers including: U.S. Statutory Accounting Principles (SAP), U.S. Generally Accepted Accounting Principles (GAAP), Canadian Generally Accepted Accounting Principles (CGAAP), Solvency II and International Financial Reporting Standards (IFRS).
- (1c) Describe the elements of the NAIC Annual Statement.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 3 (Accounting for Financial Instruments)
- Chapter 5 (Accounting Perspectives for Non-Admitted Assets)
- Chapter 7 (Statutory Loss Accounting and Schedule P)
- Chapter 8 (Notes to Financial Statements)

NAIC Statement of Statutory Accounting Principles 5, “Liabilities, Contingencies, and Impairment of Assets”

NAIC Statement of Statutory Accounting Principles 55, “Unpaid Claims, Loss and Loss Adjustment Expenses”

### Solution:

- (a) Explain how fees for a claims fraud investigator are to be categorized in statutory accounting.  
  
DCC if the claims fraud investigator is working in defense of a claim,  
AO if the claims fraud investigator is working in the capacity of a claims adjuster.
- (b) Describe how Schedule P - Part 2 (i.e., incurred development triangles by line of business) handles the following items:
  - (i) AO expenses
  - (ii) DCC expenses
  - (iii) Salvage and Subrogation Received
  - (iv) Salvage and Subrogation Anticipated



## 7. Continued

- (v) Structured Settlements
- (vi) Reinsurance recoverables from a reinsurer in financial difficulty
  - (i) Excluded from incurred loss development triangles.
  - (ii) Included in incurred loss development triangles.
  - (iii) Loss payments in the incurred loss development triangles are net of this.
  - (iv) Loss reserves in the incurred loss development triangles are net of this.
  - (v) A structured settlement, with the claimant as the payee, decreases the ultimate incurred loss and increases the paid loss. This affects the development patterns in Schedule P Parts 2, 3, and 4. Structured settlements should be noted in the Schedule P Interrogatories.
  - (vi) Loss reserves in the incurred loss development triangles are net of this, until the reinsurer is actually insolvent and the recovery is written off.
- (c) Explain how statutory accounting limits investment risk.
  - Non-admission of equities above statutory percentages of surplus or total assets.
  - Amortized value of many bonds eliminates temporary fluctuations in value stemming from the external environment.
  - Real estate held for income or for sale is valued at the lower of amortized cost and fair value.
- (d) Describe how VIC should account for this contingent loss under statutory accounting for each of the two scenarios that follow:
  - (i) VIC management's opinion is that the bad faith claim has four distinct possible outcomes, each with equal probability.
  - (ii) VIC management's opinion is that the bad faith claim has a continuous spectrum of possibilities from a known minimum amount to a known maximum amount, and no amount within that range is any more probable than any other.
    - (i) Given four distinct possible outcomes each with equal probability, VIC should determine its best estimate of the liability as one of the four outcomes.
    - (ii) Given a continuous spectrum of possibilities in a range (and no amount within that range is any more probable than any other), VIC should use the midpoint of the range.

## 8. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

### Learning Outcomes:

- (1e) Understand and apply the concepts of reinsurance accounting.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 4 (Accounting for Reinsurance Contracts)

NAIC Statement of Statutory Accounting Principles 62 Revised, "Property and Casualty Reinsurance"

Brehm, P. and Ruhm, D., "Risk Transfer Testing of Reinsurance Contracts"

### Solution:

- (a) Determine which terms of the proposed high risk commercial property reinsurance agreement will likely prevent it from being accounted for as reinsurance under the rules of U.S. statutory accounting.

### Commentary on Question:

*The model solution includes five terms. A full credit response required only four terms. The model solution is only an example. Other correct responses are possible.*

- E would likely prevent the agreement from being accounted for as reinsurance due to the fact that SSAP 62 requires both underwriting and timing risk, and E eliminates timing risk.
- F would likely prevent the agreement from being accounted for as reinsurance due to the fact that SSAP 62 notes that a reinsurance agreement should include an insolvency clause without diminution. F violates this by reducing the reinsurer's obligations if the ceding company becomes insolvent.
- H would likely prevent the agreement from being accounted for as reinsurance due to the fact that SSAP 62 notes that the agreement must provide for reports of premiums and losses, and payment of losses, no less frequently than on a quarterly basis. H provides for loss reports only twice a year.
- J would likely prevent the agreement from being accounted for as reinsurance due to the fact that SSAP 62 requires transfer of "significant insurance risk" and "it is reasonably possible that the reinsurer may realize a significant loss." Given that there is no likelihood of the loss ratio for the business reinsured exceeding 80%, the reinsurer is guaranteed a profit of 10% with the slide in J.

## 8. Continued

- K may prevent the agreement from being accounted for as reinsurance due to the fact that SSAP 62 notes that the agreement shall constitute the entire contract between the parties. K may violate this since the future profitable personal property treaty is contingent on having low volume in the high risk property treaty.
- (b) Propose a potential revision to each term identified in part (a) so that the agreement may be accounted for as reinsurance under the rules of U.S. statutory accounting.

### **Commentary on Question:**

*The responses here are dependent on the responses given in part (a). The model solution is an example of a full credit response based on the model solution for part (a). The model solution includes five terms. A full credit response required four terms.*

- E should be modified so that losses are settled in a timely manner and not delayed.
- F should remove the reduction of loss obligations in the insolvency clause.
- H should be changed to a quarterly basis at a minimum.
- J could have a flat commission of 25% so that a profit isn't guaranteed.
- K should be deleted. The agreement should constitute the entire contract. Any agreement for a subsequent separate reinsurance treaty should be negotiated on its own.

## 9. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies

### Learning Outcomes:

- (1a) Understand and apply the concepts of insurance accounting.
- (1b) Understand and compare different financial reporting standards for general insurers including: U.S. Statutory Account Principles (SAP), U.S. Generally Accepted Accounting Principles (GAAP), Canadian Generally Accepted Accounting Principles (CGAAP), Solvency II and International Financial Reporting Standards (IFRS).
- (1c) Describe the elements of the NAIC Annual Statement.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 9 (Measuring Total Income for General Insurers)
- Chapter 10 (Statutory Surplus, Capital and Income: Measuring Value and Performance)

### Solution:

- (a) Describe the adjustments required to convert statutory surplus to IFRS capital.

Statutory surplus  
+ non-admitted assets  
– bad debts  
+ equity in unearned premium reserve  
+ loss reserve discount  
– risk margins  
= IFRS 4 capital

- (b) Describe the Insurance Expense Exhibit (IEE) approach to allocating statutory surplus to line of business for the purpose of computing Investment Gain Attributable to Capital and Surplus by line of business.
  - The policyholders' surplus ratio is the ratio of mean policyholders' surplus to the sum of mean loss reserves, mean unearned premium reserves and current annual earned premium.
  - The policyholders' surplus allocated to line of business is the product of the policyholders' surplus ratio and the sum of mean loss reserves, mean unearned premium reserves, and current annual earned premium for that line of business.
  - Note that “mean” represents the average of the current and prior years.

## 9. Continued

- (c) Explain why the IEE allocation of investment income from capital and surplus to a line of business may not be appropriate for use in the ratemaking process.

**Commentary on Question:**

*There are many reasons why it may not be appropriate. The model solution shows four reasons. This is not an exhaustive list of reasons. Three reasons were required for full credit.*

- IEE allocation represents retrospective performance measurement of investment income whereas ratemaking should use a prospective measurement of investment income.
  - IEE investment income is pretax. Measurement for ratemaking should be after tax.
  - IEE allocation of capital and surplus (C&S) held is based on a ratio of total C&S to total premium and reserves. Ratemaking should use required C&S that takes into account risk.
  - IEE C&S by line does not take into account correlations across lines.
- (d) Calculate CIIC's target return on statutory surplus based upon the methodology outlined in the textbook *General Insurance Financial Reporting Topics*.

The book value capital is calculated as: statutory surplus + equity in the unearned premium reserve + implicit interest discount in full value reserves + non-admitted assets + statutory provision for reinsurance – bad debts – expected uncollectible reinsurance – reserve deficiency – cost of holding capital for unpaid losses

$$= 5 + 1 + 0.8 + 1.1 + 0.5 - 0.2 - 0.3 - 0.4 - 0.6$$
$$= 6.9$$

The target return on statutory surplus is: opportunity cost of capital  $\times$  book value of capital / statutory surplus

$$= 10\% \times (6.9 / 5)$$
$$= 13.80\%$$

## 10. Learning Objectives:

4. The candidate will be able to describe the current and historical regulatory environment.

### Learning Outcomes:

- (4b) Describe and interpret the current state of general insurance regulation in the U.S. and its development.
- (4f) Describe the development of general insurance programs controlled by government or collective insurance industry organizations.

### Sources:

AAA Flood Insurance Subcommittee, "The National Flood Insurance Program: Past, Present ... and Future?"

Cappelletti, A., "Government Provision of General Insurance"

NAIC, "Biggert-Waters Flood Insurance Reform Act of 2012"

### Solution:

- (a) Compare the NFIP to private-sector property insurance with respect to the following features:
  - (i) Contract language and policy disputes
  - (ii) Coverage and limits
  - (iii) Determination of rates

### Commentary on Question:

*The model solution is an example of a full credit response but includes more detail than was expected for full credit for completeness.*

- (i) Contract language and policy disputes: NFIP flood policy contract language is provided by federal statute and/or regulation. The insured may not be able to assert that he/she did not know or understand the policy in coverage disputes. The NFIP requires that coverage disputes arising under the program be litigated in federal courts. In the private sector, litigation often arises over ambiguities in policy language, and, because of the general principle in contract law that a contract must be construed against the drafter, the courts interpret disputed policy language in favor of the insured. Most litigated coverage disputes arising out of private sector insurance policies are heard in state courts.

## 10. Continued

- (ii) Coverage available: The types of coverages and insurance limits provided by the NFIP are set by statute and regulation, and are more restrictive than that provided under typical personal property insurance policies in the private sector. The NFIP uses actual cash value for claims settlement while the private sector generally uses replacement cost. Additional living expenses are not covered by the NFIP while they are generally covered by the private sector.
  - (iii) Rates: The NFIP has subsidized rates for high risk zones to encourage participation (although subsidies are being phased out with Biggert-Waters). Private sector property policies in a competitive market are generally actuarially sound without subsidies. Also, NFIP policies do not include a profit load that includes the cost of capital and the NFIP is not subject to holding capital to support its policies. Private sector insurance policies include a profit provision sufficient to cover all costs of risk transfer. A private sector insurance company must maintain and build capital to preserve its solvency.
- (b) Compare the operation of the “Cat Nat” plan in France to the NFIP in the United States.

### **Commentary on Question:**

*The model solution is an example of a full credit response but includes more detail than was expected for full credit for completeness.*

Under the NFIP in the U.S.:

- Flood insurance is made available with the federal government as the insurer.
- The program is managed by a branch of the FEMA.
- It includes the “Write Your Own” program in which private insurers administer the program with the federal government taking on all underwriting risk.
- Participation in the program requires communities to adopt and enforce regulations for flood plain management and land-use/building codes.
- For extreme catastrophic events, the NFIP uses its borrowing authority. Funds are paid back to the U.S. Treasury over time with interest. There exists a legislated cap on how much the NFIP can borrow.

Under France’s Cat Nat:

- Private insurance companies pay compensation to policyholders; the insurance companies are then reinsured by the CCR (if they have chosen the CCR as their reinsurer for natural catastrophes).
- The CCR is backed by the government of France.
- Reinsurance of Cat Nat coverage by CCR is unlimited.

## 10. Continued

- Compensation under Cat Nat must meet the following two conditions: a natural disaster (not just flood) has occurred and been recognized by a government decision, and the property damaged must be covered by a property damage insurance policy. There is no such trigger for NFIP coverage.
- (c) Explain why private sector insurers in China are generally able to include flood peril coverage in property insurance policies without any government involvement.

Despite massive economic losses, insured losses due to flood are currently limited by the low penetration of insurance in the market.



## 11. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

### Learning Outcomes:

- (1b) Understand and compare different financial reporting standards for general insurers including: U.S. Statutory Account Principles (SAP), U.S. Generally Accepted Accounting Principles (GAAP), Canadian Generally Accepted Accounting Principles (CGAAP), Solvency II and International Financial Reporting Standards (IFRS).
- (1f) Understand and apply the elements of discounting for general insurance loss reserves.
- (1g) Demonstrate knowledge of taxation for general insurers in the U.S.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 1 (Accounting Systems for General Insurers)
- Chapter 2 (Accounting for Insurance Contracts)
- Chapter 7 (Statutory Loss Accounting and Schedule P)
- Chapter 15 (Federal Income Taxes for General Insurers)

### Solution:

- (a) Compare the process for discounting unpaid losses under these three accounting standards (U.S. tax, Canadian statutory, IFRS 4) with respect to the following:
  - (i) Discount rate
  - (ii) Risk margins
- (i) Discount rate
  - a. U.S. Tax: mid-term risk-free rates based on a 60-month moving average and is not updated to current rates as claims mature
  - b. Canadian Statutory: investment yield on assets updated at each valuation
  - c. IFRS 4: current market rates matched to currency and maturity, and adjusted for illiquidity
- (ii) Risk margins
  - a. U.S. Tax: no risk margin
  - b. Canadian Statutory: includes three provisions for adverse deviation (loss development, reinsurance recoverables and discount rate)
  - c. IFRS 4: explicit adjustment to reflect the uncertainty in the estimate of future cash flows

## 11. Continued

- (b) Calculate the total Internal Revenue Service (IRS) tax-basis discounted unpaid losses and expenses for U.S. tax purposes given the following information:

**Commentary on Question:**

*The model solution is shown as a calculation in a table. This format was not required for full credit.*

Accident Year	Schedule P unpaid losses	Unpaid losses gross of tabular discount	Discounted	Minimum of Discounted & Schedule P by Accident Year
2011	4,000	4,400	$4,400 \times 0.92 = 4,048$	4,000
2012	7,000	7,900	$7,900 \times 0.90 = 7,110$	7,000
2013	9,000	10,200	$10,200 \times 0.87 = 8,874$	8,874
Total	20,000	22,500		<b>19,874</b>

The total is 19,874,000.

- (c) Describe how the computation of earned premium in U.S. tax accounting differs from its computation in U.S. statutory accounting.

**Commentary on Question:**

*The model solution provides an example of a full credit response. There are other potential full credit responses.*

Taxable premium revenue differs from statutory accounting premium revenue by the revenue offset which adjusts premium for a 20% implicit deferred acquisition cost.

## 12. Learning Objectives:

5. The candidate will be able to understand tort law and insurance law with respect to its impact on the general insurance industry.

### Learning Outcomes:

- (5b) Discuss the influence of the U.S. tort litigation environment in Canada.

### Sources:

Klar, L., "The Impact of U.S. Tort Law in Canada"

Kent, N., "Insurer Bad Faith Damages: A USA-Canada Comparison"

### Solution:

- (a) Compare Canadian tort law to U.S tort law and tort law in other Commonwealth countries (such as England, Australia and New Zealand) with respect to the following:
  - (i) Civil Jury
  - (ii) Contingency Fees
  - (iii) Punitive Damages
  - (iv) Class Actions
  - (i) The United States make use of the civil jury in tort law. Commonwealth countries such as England and Australia do not use civil juries; they have trial by judge. Canada makes use of the civil jury in the common law provinces, but its use is less frequent than in the United States.
  - (ii) Contingency fee arrangements to pay for a lawyer's services are common practice in the United States. Many Commonwealth countries severely restrict the use of contingency fees or ban their use outright. In contrast, contingency fees are widely used in personal injury actions in Canada, much as they are used in the United States.
  - (iii) The U.S. tort system is well known for extremely large awards for punitive damages. These types of awards are not seen in other jurisdictions. While Canada does not have the extremely large punitive damages awards that are seen in the United States, there have been a number of very large awards for punitive damages that show that Canadian courts share similar views with U.S. courts.

## 12. Continued

- (iv) Use of class action in the U.S. is extensive. This is not common in other jurisdictions. Canada, however, also makes extensive use of class actions.
- (b) Describe the major difference between Canadian tort law and U.S. tort law with respect to product liability.

Canadian product liability law falls into negligence law, and U.S. law is based on strict liability. Arguments to adopt strict product liability have so far not been accepted in Canada by Canadian judges. In practice, the difference is not as large as one would imagine. In Canada, when a product malfunctions and causes injury, an inference that it was manufactured negligently can often be made in the courts (resembling strict liability).

- (c) Compare the treatment of compensation for “emotional distress” in Canadian tort law with that in U.S. tort law with respect to insurer bad faith damages.

In the U.S., many states permit the insured to recover additional damages for emotional distress arising from the bad faith denial of coverage. The awards for emotional distress can be substantial.

In Canada, it is a general principle of contract law that damages are not awarded for mental distress arising from the breach of a contract. However, there is an exception for insurance contracts, where these awards are permitted. The amounts tend to be modest compared to those in the U.S.

### 13. Learning Objectives:

4. The candidate will be able to describe the current and historical regulatory environment.

#### Learning Outcomes:

- (4d) Discuss market conduct regulation.

#### Sources:

Canadian Council of Insurance Regulators, “Use of Credit Scores by Insurers”

Insurance Bureau of Canada, “Code of Conduct for Insurers’ use of Credit Information (CODE)”

Insurance Regulation, The Institutes, Chapter 8 (Rate Regulation)

#### Solution:

- (a) Define credit-based insurance score.

A numerical ranking used by insurers as a snapshot of the credit performance and financial health of an individual at a specific point in time. It is derived from credit information contained in credit reports collected and maintained by credit reporting agencies.

- (b) Compare credit-based insurance scores to traditional financial credit scores.

Both are derived from information contained in a credit report, but the mathematical model used is different and takes into consideration different credit characteristics. Traditional financial credit scores are used to predict the likelihood that a consumer will default on a loan. Credit-based insurance scores are calculated to attempt to predict the likelihood that a policyholder will file an insurance claim.

- (c) Identify two potential risks to consumers that may result from an insurance company’s use of credit-based insurance scores.

#### Commentary on Question:

*There are a number of potential risks. Two of the many potential risks are included in the model solution.*

1. Inadequate consent
2. Unreliable credit data

## 13. Continued

- (d) Explain how adherence to the Insurance Bureau of Canada's *Code of Conduct for Insurers' use of Credit Information* should minimize each potential risk identified in part (c).

**Commentary on Question:**

*The response for this part is dependent on the response for part (c). The model solution for this part is for the two potential risks noted in the model solution for part (c).*

1. Inadequate consent: The IBC Code requires gathering prior consent to collect and use credit information (written or verbal). Consent must be informed and no one can give consent for another person. This should minimize the problem of inadequate consent.
  2. Unreliable credit data: The IBC Code requires the insurer to ensure credit information used is current and accurate, updating information as requested by the policyholder. This should minimize the use of unreliable data.
- (e) Explain how use of credit-based insurance scores in underwriting may result in unfair discrimination.

**Commentary on Question:**

*The model solution is an example of a full credit response.*

In insurance, there has always existed a form of "rate discrimination" that is considered to be fair if the rates are based on underlying insurance costs. As long as the risk classification system is based on actuarial evidence and is legally accepted, insurers can charge different rates to different risks.

It is argued that credit scores are indicative of personal responsibility including safe operation of a vehicle. If this is true and there exists actuarial evidence linking insurance claims with credit scores, then use of credit score should not result in unfair discrimination. However, even if this is true, it may lead to unfair discrimination if credit score is highly correlated with prohibited rating/classification factors.

## 14. Learning Objectives:

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

### Learning Outcomes:

- (2i) Discuss the function of credit rating agencies and their impact on general insurers.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 13 (General Insurance Financial Ratings)

### Solution:

- (a) Describe how each of the following stakeholders benefits from insurance/reinsurance companies being financially rated by rating agencies:
  - (i) Insurance consumers
  - (ii) Insurance companies in general
  - (iii) Reinsurance companies in particular

### Commentary on Question:

*The model solution is an example of a full credit response.*

- (i) Consumers (and their agents) do not have the time/knowledge or access to information to properly assess financial strength for each insurer that they wish to consider. Independent financial strength ratings provide access to a measure of financial strength so that consumers can make an informed decision efficiently.
  - (ii) Insurance companies benefit since consumers and agents are wary of financially distressed insurers. Rating agencies provide a means for insurers to show customers that they have the financial ability to meet policyholder obligations.
  - (iii) Primary insurers need to assess the financial strength of reinsurers to balance premium vs. credit risk. A primary insurer can use the reinsurer's rating as one tool to assess the financial strength of the reinsurer.
- (b) Describe the conflict of interest that may result from such an arrangement.

In most principal-agent relations, the principal sets the terms and the agent fulfills the contract. If the insurer (client) controlled the product (rating) then the financial rating would not be seen as objective.

## 14. Continued

- (c) Explain how the process used for rating insurers reduces the likelihood of such conflicts of interest being realized.

**Commentary on Question:**

*The model solution is an example of a full credit response but with more detail than was required for full credit. A full credit response was expected to include three short paragraphs of information.*

The rating agency process is different. The rating agency sets the terms and the insurer strives to meet the expectations of the rating agency. Instead of preparing a confidential report for the insurer, the rating agency publishes the rating for use by third parties.

A rating that was not independently and objectively determined would not be valued by the market. The value of ratings depends on their objectivity. The insurer being rated cedes control of the process to the rating agency to raise the value of the rating. This should reduce the likelihood for such conflicts of interest.

Also, there exist legal requirements for extensive disclosure of rating agencies' methods, to help policyholders and agents understand how agencies determine their ratings.

Furthermore, while a lead analyst prepares a ratings proposal for the ratings committee, the ratings committee decides the rating after a presentation by the lead analyst, reducing the potential for manipulation by the company.



## 15. Learning Objectives:

5. The candidate will be able to understand tort law and insurance law with respect to its impact on the general insurance industry.

### Learning Outcomes:

- (5c) Discuss the issues of tort trends and tort reform as it applies to the general insurance industry.
- (5d) Understand mass torts/class action suits and discuss their impact on the general insurance industry.
- (5e) Describe and interpret legal cases/issues from *Important Legal Cases with Respect to the U.S. General Insurance Industry*.

### Sources:

Excerpts from Business Law for Insurance Professionals, Institutes Custom Publishing, Assignment 2 (Tort Law)

Cappelletti, A., "Tort Issues for General Insurance Actuaries"

Bell, R. and Haskins, T., "The Effects of Wal-Mart v. Dukes on Class Certification"

### Solution:

- (a) Explain how class action lawsuits should increase the efficiency of the courts.

Class actions refer to cases that join a large number of plaintiffs with similar injuries sustained under similar circumstances into one action. The plaintiffs are generally represented by a small number of law firms.

Combining similar claims in a class action allows for an increase in efficiency because the presentation of facts and determination of fault need only be done once. It also allows for smaller claims to be brought forward that might not otherwise have been, due to the costs of presenting a case significantly outweighing the potential award.

- (b) Identify a type of class action reform that was enacted to move class actions back to their intended purpose of court efficiency.

### Commentary on Question:

*There are a number of possible correct responses; one is given in the model solution as an example.*

Legislation that requires attorney fees in a class action to be based upon actual time and expenses, not a percentage of the award.

## 15. Continued

- (c) Describe how the class action reform identified in part (b) addresses court efficiency.

**Commentary on Question:**

*The solution for this part is dependent on the response in part (b). The model solution for this part is based upon the model solution for part (b).*

Fees as a percentage of the award produce a windfall for the attorneys while the compensation for those injured is relatively small on an individual basis. This reform ensures that more of the award goes to compensate the injured parties.

- (d) Describe the commonality requirement for class action certification.

Commonality requires an established class with a well-defined common interest in the questions of law and fact affecting the parties.

- (e) Explain the reasoning of the Supreme Court's decision on the commonality requirement in *Wal-Mart Stores, Inc. v. Dukes*.

**Commentary on Question:**

*The model solution shows the level of detail required for full credit.*

Justice Scalia, writing for the majority, observed that what matters for class certification regarding commonality is not common "questions," but rather common "answers." The claims "must depend upon a common contention" that is "capable of classwide resolution." It is not enough that members of the class "all suffered a violation of the same provision of law."

The Court found that "significant proof" was absent in the Wal-Mart case, as Wal-Mart had a policy explicitly forbidding sexual discrimination, and local supervisors had discretion over employment matters. The Court also disregarded the expert report put forth by the plaintiffs, which sought to demonstrate that Wal-Mart's corporate culture made it vulnerable to bias. As a result, the majority concluded that there was not a "common answer to the crucial question of why I was disfavored."

## **16. Learning Objectives:**

4. The candidate will be able to describe the current and historical regulatory environment.

### **Learning Outcomes:**

- (4b) Describe and interpret the current state of general insurance regulation in the U.S. and its development.
- (4c) Compare different forms of rate regulation.
- (4e) Discuss the issues regarding usage based insurance and telematics in automobile insurance.
- (4f) Describe the development of general insurance programs controlled by government or collective insurance industry organizations.
- (4g) Describe the mechanisms of operation for government and/or collective insurance industry controlled programs as included in the resources.
- (4h) Discuss the concept of no-fault laws and its application in general insurance.

### **Sources:**

Insurance Regulation, The Institutes, Chapter 2 (Development of Insurance Regulation)

Facility Association, "Considerations for Residual Market Regulation"

Cappelletti, A., "Government Provision of General Insurance"

Cappelletti, A., "Usage Based Insurance and Telematics"

Edmunds, T., "Insurance and the discrimination laws: motor and travel insurance"

### **Solution:**

- (a) Explain the system of compensation available to injured parties under a modified no-fault plan.

### **Commentary on Question:**

*The model solution is an example of a full credit response.*

Under a modified no-fault plan, the tort liability system is not completely replaced by no-fault first-party accident benefits. Under this system, no-fault benefits are available to all accident victims, while lawsuits are only allowed if a defined threshold is met.

## 16. Continued

- (b) Evaluate the proposed legislation giving consideration to:
  - (i) Potential violations of federal law;
  - (ii) Potential impact on the residual market population;
  - (iii) Potential issues for policyholders and/or producers; and
  - (iv) Potential issues for market stability and competition.

### **Commentary on Question:**

*Widely varying responses for full credit are possible. The model solution is one example of a full credit response.*

- (i) Element H may be a violation of federal antitrust law. The proposed legislation probably should not include this element. The statistical agency should be limited to publishing aggregate industry statistics. The use of uniform rates (with minimal deviation) from Elements F & G collectively may violate federal antitrust laws as it severely restricts competition in rates. Perhaps increasing the maximum deviation to +/-25% and reducing the use of uniform rates from 5 to 3 years could help make this more acceptable.
- (ii) Given the number of changes in the legislation and the lack of ability to rate on age and gender, the legislation will likely increase the residual market population significantly. The residual market will see an increase in young male drivers and drivers over 65 years of age. The residual market will no longer be a market of last resort. Increasing the permitted deviations and allowing rating on more factors from UBI may mitigate this effect. Financial results from the residual market JUA will likely be very poor. Residual market rates should be significantly higher than the voluntary market; the +5% deviation is likely not enough.
- (iii) The proposed legislation implements a great number of changes to the current system. It is clear that both producers and policyholders will need education regarding the new legislation. Producers will need to be able to provide informed guidance to policyholders regarding modified no-fault, use of UBI, and the banning of gender for rating. Policyholders will need to be prepared for potentially large changes to rates. UBI rating on time of day driven could be challenged in the courts as unfair discrimination due to the fact that those doing shift work (requiring driving at night) are generally of a lower socioeconomic status.

## 16. Continued

- (iv) The proposed legislation implements a great number of changes to the current system with severe restrictions on rating. There will likely be a great disruption in the market. It is likely that some insurers will abandon the market. This legislation should be modified in many areas. Each of the elements needs to be considered with input from the industry. Consideration should be given to introducing elements in stages and not using a published uniform rate system, thus allowing more competition.

## 17. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

### Learning Outcomes:

- (1c) Describe the elements of the NAIC Annual Statement.
- (1h) Estimate the premium asset for retrospectively rated policies for financial reporting.

### Sources:

Teng, M. and Perkins, M., "Estimating the Premium Asset on Retrospectively Rated Policies"

NAIC, Annual Statement

### Solution:

- (a) Identify where the development of policy year premium and loss data can be found in the 2013 NAIC Annual Statement.

Schedule P - Part 7, Loss Sensitive Contracts

- (b) Show that the Premium Development to Loss Development (PDL) ratio under the formula approach for the first retro adjustment is 1.662.

### Commentary on Question:

*Only the final two lines of the model solution were required for full credit.*

$$P_1/L_1 = [(BP/L_1) \times TM] + [(CL_1/L_1) \times LCF \times TM]$$
$$[(BP/L_1) \times TM] \approx BP \times TM / (SP \times ELR \times \%Loss_1)$$

$$BP \times TM / (SP \times ELR \times \%Loss_1) = (BP/SP) \times TM / (ELR \times \%Loss_1)$$

where  $BP/SP = BPF$

$$P_1/L_1 = [BPF \times TM / (ELR \times \%Loss_1)] + [(CL_1/L_1) \times LCF \times TM]$$
$$[0.25 \times 1.02 / (0.65 \times 70\%)] + [0.90 \times 1.20 \times 1.02] = 1.662$$

- (c) Explain why the formula approach includes a loss capping ratio.

It takes into account the portion of loss outside the boundaries of the retrospective rating plan maximum and minimum.

## 17. Continued

- (d) Calculate the cumulative PDL (i.e., CPDL) ratios for the first and second retro adjustments.

**Commentary on Question:**

*The model solution is in the form of a table. This format was not required for full credit.*

	(1)	(2)	(3)	(4)	(5)	(6)
Retro Adj	PDL Ratio	% loss emerged	(1)×(2)	Upward cumulative (3)	Upward cumulative (2)	CPDL Ratio = (4)/(5)
1	1.662	0.90	1.4958	1.5238	1	1.5238
2	0.350	0.08	0.028	0.028	0.1	0.28
3	0.000	0.02	0	0	0.02	

- (e) Estimate the premium asset on retrospectively rated policies for policy year 2011 as of December 31, 2013 using the information from part (d) and the amounts in the following table:

Policy Year	Expected Future Loss Emergence	Premiums Booked from Prior Adjustment	Premiums Booked as of 12/31/13	Completed Retro Adjustments as of 12/31/2013
2011	50,000	680,000	690,000	1

Premium Asset = Estimated Total Premium – Premium Booked as of 12/31/13

Premium Asset = [Premium Booked from Prior + Expected Future Premium] – Premium Booked as of 12/31/13

Premium Asset = [680,000 + Expected Future Loss Emergence × CPDL Ratio] – 690,000

Premium Asset = [680,000 + 50,000 × 0.28] – 690,000

Premium Asset = 694,000 – 690,000 = 4,000

## 18. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

### Learning Outcomes:

- (1b) Understand and compare different financial reporting standards for general insurers including: U.S. Statutory Accounting Principles (SAP), U.S. Generally Accepted Accounting Principles (GAAP), Canadian Generally Accepted Accounting Principles (CGAAP), Solvency II and International Financial Reporting Standards (IFRS).
- (1c) Describe the elements of the NAIC Annual Statement.
- (1f) Understand and apply the elements of discounting for general insurance loss reserves.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 1 (Accounting Systems for General Insurers)
- Chapter 2 (Accounting for Insurance Contracts)
- Chapter 3 (Accounting for Financial Instruments)
- Chapter 5 (Accounting Perspectives for Non-Admitted Assets)
- Chapter 7 (Statutory Loss Accounting and Schedule P)
- Chapter 8 (Notes to Financial Statements)

NAIC, Annual Statement

NAIC, Accounting Practices and Procedures Manual

- Preamble
- Statement of Statutory Accounting Principles 65, "Property and Casualty Contracts"

### Solution:

- (a) Describe two U.S. statutory accounting rules, other than full value reporting of unpaid losses, that use the concept of conservatism to achieve the statutory accounting objective.

### Commentary on Question:

*There are a number of statutory accounting rules using conservatism to achieve the statutory accounting objective. The model solution presents only two of them. Two were required for full credit.*

- Non-admitted status for assets not available to fulfill policyholder obligations
- Immediate expensing of acquisition costs



## 18. Continued

- (b) Compare the two statutory accounting rules that you described in part (a) with the comparable rules under GAAP.

**Commentary on Question:**

*The response for this part is dependent on the response given for part (a). The model solution for this part is based upon the model solution for part (a).*

- GAAP recognizes assets even if they cannot be used to fulfill policyholder obligations.
  - GAAP amortizes acquisition costs over contract periods.
- (c) Describe the statutory accounting requirements for a loss reserve to be subject to tabular discounting.

Tabular reserves are indemnity reserves that are calculated using discounts determined with reference to actuarial tables which incorporate interest and contingencies such as mortality, remarriage, inflation, or recovery from disability applied to a reasonably determinable payment stream.

- (d) Compare tabular and non-tabular discounting of loss reserves in statutory accounting with respect to:
- (i) Loss adjustment expenses
  - (ii) Schedule P Part 4 reporting (i.e., bulk and IBNR loss reserves)
- (i) Loss adjustment expenses (LAE) are not to be included in tabular discounting. LAE may be included in non-tabular discounting.
- (ii) Schedule P Part 4 reporting is gross of both tabular and non-tabular discounts.
- (e) Identify items that must be reported in the Notes to Financial Statements if the rates used to discount the liabilities have changed since the prior annual statement.

Disclosure includes the discounted liabilities at the current and previous rates, and the change in the discounted liability that results from the change in the discount rate. The amounts in this disclosure exclude the current accident year's liabilities.

## 19. Learning Objectives:

3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

### Learning Outcomes:

- (3a) Describe, interpret and apply the applicable Standards of Practice.

### Sources:

Actuarial Standards of Practice

- No. 1, Introductory Actuarial Standard of Practice
- No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves
- No. 41, Actuarial Communications
- No. 43, Property/Casualty Unpaid Claim Estimates

### Commentary on Question:

*Widely varying responses were possible for this question. The model solution is one example of a full credit response. A full credit response was expected to include at least five paragraphs, where each of the four ASOPs is addressed in at least one paragraph.*

### Solution:

Describe how each of the following Actuarial Standards of Practice (ASOP) would guide you in your preparation of the Statement of Actuarial Opinion with respect to AO expenses:

- (i) ASOP No. 1, Introductory Actuarial Standard of Practice
- (ii) ASOP No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves
- (iii) ASOP No. 41, Actuarial Communications
- (iv) ASOP No. 43, Property/Casualty Unpaid Claim Estimates

The governing ASOP for statutory actuarial reserve opinions is ASOP 36. Estimating loss reserves is governed by ASOP 43. ASOP 41 governs communications between you and your client. Moving from the most specific issues to the more general issues, the order of guidance is ASOP 36, 43 and then 41.

## 19. Continued

In ASOP 36, the actuary is required to prepare his or her actuarial opinion in a manner that satisfies the requirements of laws or regulations. These laws and regulations require separate determination of allocated and unallocated claim adjustment expenses in Schedule P. In ASOP 36, when, in the actuary's opinion, the reserves for a certain item or items are in question because they cannot be reasonably estimated or the actuary is unable to render an opinion on those items, the actuary should issue a qualified statement of actuarial opinion.

ASOP 43 provides guidance when making a reserve estimate. It calls for the actuary to identify the specific types of unpaid claim adjustment expenses covered in the unpaid claim estimate such as coverage dispute costs, defense costs, and adjusting costs. The actuary should consider the reasonableness of the assumptions underlying each method or model used.

ASOP 41 provides guidance regarding communications. The actuary should communicate with a principal or member of the intended audience for his or her reserve opinion. The actuary must ensure the form and content of his or her communication is clear and appropriate with respect to any uncertainty regarding loss adjustment expenses.

ASOP 1 makes it clear that actuaries are expected to take a good faith approach in complying with the ASOPs, exercising good judgment and professional integrity. It is inappropriate for any user of an ASOP to make a strained interpretation of any provisions of an ASOP. The actuary needs to provide an estimate of the unallocated claim adjustment expense reserves or provide a qualified opinion.

## 20. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.
  
4. The candidate will be able to describe the current and historical regulatory environment.

### Learning Outcomes:

- (1e) Understand and apply the concepts of reinsurance accounting.
  
- (4i) Understand the regulation of reinsurance.
  
- (4j) Outline the function and regulation of captives.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 4 (Accounting for Reinsurance Contracts)

Brehm, P. and Ruhm, D., “Risk Transfer Testing of Reinsurance Contracts”

Hall, S., “Recent Developments in the Captive Insurance Industry”

NAIC, Statement of Statutory Accounting Principles 62 Revised, “Property and Casualty Reinsurance”

### Solution:

- (a) Describe how you would determine the risk transfer requirement under the Financial Accounting Standards Board reporting standard 944-20-15 (i.e., Statement of Financial Accounting Standards 113 pre-codification) and Statement of Statutory Accounting Principles No. 62 for each reinsurance treaty.

The first treaty is a retroactive reinsurance treaty with significant uncertainty in the amount and timing of loss payments. There is transfer of risk, so the treaty is reinsurance for accounting purposes.

For the second treaty, CCIC may argue that ACME’s separate contract with RRR is not reinsurance, and that it should not affect the accounting treatment of the treaty for CCIC. However, SSAP 62 says that all contracts between the ceding company and the reinsurer must be viewed together. Given this fact, the treaty does not transfer significant insurance risk, and is not reinsurance for accounting purposes.

## 20. Continued

- (b) Recommend how CCIC should account for these reinsurance treaties under each of the following scenarios:
  - (i) CCIC is a pure captive subject to GAAP.
  - (ii) CCIC is a Risk Retention Group captive subject to U.S. statutory accounting.
  - (i) GAAP accounting for retroactive reinsurance calls for the gain from retroactive reinsurance to be recognized over the life of the claims. CCIC should use deposit accounting, not reinsurance accounting, for both treaties.
  - (ii) Statutory accounting recognizes the income from retroactive reinsurance immediately, not over the life of the claims, but the gain is segregated as special surplus until the actual reinsurance recovered exceeds the consideration paid. CCIC should use reinsurance accounting for the first treaty and deposit accounting for the second treaty.

## 21. Learning Objectives:

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

### Learning Outcomes:

- (2a) Evaluate the financial health of a general insurer using information contained in the Annual Statement.
- (2c) Calculate and interpret the results of financial health ratios.

### Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Chapter 11 (Measuring Insurer Financial Strength)

### Solution:

- (a) Evaluate the effectiveness of IRIS Ratio 3 (Change in Net Premiums Written) as a stand-alone test to assess the financial health of an insurer. Include in your evaluation:
  - (i) Significance of IRIS Ratio 3 abnormal values
  - (ii) A weakness of IRIS Ratio 3
  - (iii) Other IRIS ratios that can enhance IRIS Ratio 3's ability to assess the financial health of an insurer

### Commentary on Question:

*The model solution is an example of a full credit response. Other responses were possible for full credit.*

- (i) Abnormal values for IRIS Ratio 3 ( $> +33\%$ , or  $< -33\%$ ) rarely occur in normal operations. Rapid growth may reflect pricing below cost to increase market share. Rapid decline may reflect unprofitable operations.

Declines in net premium written occur for several reasons: overpricing, poor business, restricted acceptance of new business, and loss of surplus. Insurers with high losses from poor business may tighten underwriting standards and accept less new business.

## 21. Continued

Rapid growth may reflect underpricing without a sustainable business strategy to reduce costs or maintain demand. Some insurers price below market to gain market share and hope to recoup losses from renewal business. This growth often signals future insolvency.

- (ii) Premium volume can be distorted by mergers and acquisitions. An insurer that acquires another insurer half its size has a premium growth rate of 50%. Acquisitions are disclosed in the notes to the financial statements, but the premium growth still triggers an exceptional value.

Results of IRIS Ratio 3 can be distorted by changes to reinsurance.

Rapid growth may result from high consumer demand for innovative products that would signal long-term profitability.

- (iii) Abnormal results for IRIS Ratio 3 can predict insolvency if it is coupled with a decline in surplus or operating ratios above 100%.

Therefore, one should examine IRIS Ratio 3 in conjunction with the results of IRIS Ratio 7 (Gross Change in PS) and IRIS Ratio 5 (Two-Year Overall Operating Ratio).

- (b) Provide an example of two IRIS ratios that are not orthogonal to each other. Include an explanation of why they are not orthogonal.

**Commentary on Question:**

*There are many possible pairs here. One pair is shown as an example in the model solution.*

IRIS Ratio 11 (One-Year Reserve Development to PS) and IRIS Ratio 12 (Two-Year Reserve Development to PS) are not orthogonal to each other since they are highly correlated. Information from IRIS Ratio 11 makes up a portion of the information in IRIS Ratio 12.