

GI FREU Model Solutions

Fall 2014

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:

- (2e) Understand the development and principles of solvency regulation, including that in the U.S., Canada and the E.U.

Sources:

Vaughan, T., "The Implications of Solvency II for U.S. Insurance Regulation"

Solution:

- (a) Compare the rules-based approach to the principles-based approach regarding the establishment of regulatory capital requirements and financial oversight. Include one strength and one weakness of each approach.

Commentary on Question:

Widely varying responses are possible for full credit. One example of a full credit response is provided. The information within the brackets in the model solution was not required for full credit.

Under a rules-based approach the regulator specifies rules that insurance companies need to follow in setting asset values, reserves and RBC. No discretion is left for company regarding valuation of items with specific rules.

Under a principles-based approach, regulation focuses on ensuring that insurance companies have effective risk management systems in place, and hold the appropriate amount of capital for those risks. Companies have discretion regarding the assumptions (*e.g., discount rates, asset valuation, and optimal capital methodology*).

- (b) Describe and justify an approach to insurance supervision that is a combination of principles-based and rules-based regulation.

Commentary on Question:

Widely varying responses are possible for full credit. One example of a full credit response is provided. The information within the brackets in the model solution was not required for full credit.

1. Continued

Use principles-based approach for investment limitations and target capital.
Use rules-based approach for minimum capital requirements and valuation of assets.

Each approach has its merits. Rules-based ensures consistency, but it is not flexible in a changing environment. Principles-based focuses on utilizing the insurer's knowledge of risk management, but this may not be consistent among insurers.

Use rules-based where consistency is needed: minimum capital and asset valuation. Use principles-based where insurer's knowledge of the operations adds value: investment restrictions (*need to consider whole portfolio*) and optimal capital (*use insurer's internal modeling as it is more accurate than a factor-based method*).

- (c) Explain how guaranty funds can reduce market discipline and increase the amount of risk assumed by insurers.

In the absence of guaranty funds, policyholders have an incentive to monitor the financial solvency of their insurer. Guaranty funds remove this market discipline as policyholders know there is a financial backstop. Without the market discipline imposed by risk-averse customers, the risk profile of the insurer can be expected to increase.

2. 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.

Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Part 1 (Accounting Systems for General Insurers)
- Part 3 (Accounting for Financial Instruments)
- Part 4 (Accounting Perspectives for Non-Admitted Assets)
- Part 10 (Statutory Surplus: Computation, Pricing, and Valuation)

Solution:

- (a) Provide the insurer's statutory accounting entries on June 30, 2014 showing:
 - (i) Credits and debits to balance sheet accounts
 - (ii) Credits and debits to income statement accounts
 - (iii) Direct charges and credits to surplus

BS=balance sheet, IS=income statement, M=million

Debit cash on BS 4M ($4\%/2 \times 200M$) for bond interest

Credit investment income on IS 4M for bond interest

Credit cash on BS 1.4M ($4M \times 35\%$) for tax

Debit tax expense on IS 1.4M for tax

Credit cash on BS 2.6M for shareholder dividend payment

Direct charge to surplus of 2.6M for shareholder dividend payment

- (b) Explain why U.S. statutory accounting requires assets to be segmented into admitted assets and non-admitted assets.

Commentary on Question:

There are a number reasons. The model solution includes five reasons, of which three were required for full credit. Other reasons not listed in the model solution are possible.

2. Continued

Designation of an asset as non-admitted in statutory accounting, where liquidation value is the focus, serves to:

- Mitigate investment risk;
- Reflect the asset's inability to fund claim payments;
- Provide a conservative view of counterparty credit risk;
- Reflect the assets that do not (or minimally) contribute to meeting the policyholder obligations of an insolvent insurer in liquidation; and
- Represent a conservative valuation of assets.

(c) Determine the admitted value for each of the following assets under U.S. statutory accounting for a general insurance company:

- (i) Common stock purchased at 500,000 currently valued at 1,000,000
- (ii) Building, for use as office space by the general insurance company, purchased at 200,000, depreciated by 25%, with a market value of 400,000
- (iii) An agent's balance of 100,000, 95 days past due

The admitted assets are:

- (i) Stock: Admitted asset is the current value of 1,000,000.
- (ii) Building: Admitted asset is purchase price (200,000), less depreciation (25%). Therefore admitted asset is 150,000.
- (iii) Agent's balance of 100,000, 95 days past due: Admitted asset is 0 because it is over 90 days past due.

3. 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.
- (4d) Discuss market conduct regulation.
- (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.

Sources:

Insurance Regulation, The Institutes, Chapter 9 (Claim Regulation)

Facility Association, "Considerations for Residual Market Regulation"

Solution:

- (a) Explain the relationship between rate regulation and residual market population level.

Rate regulation, particularly prior approval, is persistently associated with larger residual market shares.

- (b) Describe the "take all comers" rule and critique its effectiveness in Ontario.

Commentary on Question:

Widely varying responses are possible for full credit. One example of a full credit response is provided.

"Take all comers" regulations typically require an insurer to accept all business that fits the underwriting guidelines that have been filed with a regulator.

Reducing the flexibility of companies to underwrite leads to companies canceling brokers and their entire book of business rather than individual risks that are undesirable from a company standpoint.

3. Continued

In Ontario, a specific consequence of the “take all comers” rule is the persistent existence of the Risk Sharing Pool (RSP). The RSP is a reinsurance mechanism funded by all auto insurance companies in the province. It results in cross-subsidization between competitors and of higher-risk drivers. The RSP creates additional administrative complexity and cost for insurers, and ultimately their customers.

Effectiveness of the regulation in limiting access to the residual market has to be questioned. Despite the existence of “take all comers” regulation in Ontario, the number of new business private passenger applications received by the residual market increased significantly, suggesting that the market has found ways to avoid its intent.

- (c) Identify and describe two types of fraudulent claims activity that affect general insurers.

Commentary on Question:

Many types are possible. Only two were required for full credit. Three types are provided in the model solution.

- Insider fraud: Involves a person working inside an insurance company who commits a fraudulent transaction.
- Fraudulent consumer claims: Some consumers commit fraud through false claims with the intent to make money through insurance settlements.
- Exaggeration: This type of fraud involves the inflation (exaggeration) of the loss from a legitimate claim.

- (d) Identify and describe one antifraud effort initiated by some states.

Commentary on Question:

Many anti-fraud efforts exist and represent full credit responses. One example is provided in the model solution.

Department of Insurance (DOI) Special Investigations Unit (SIU): DOIs in all states have employees working in a SIU who investigate incidents of fraud against insurers.

4. 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.
- (5e) Describe and interpret legal cases/issues from *Important Legal cases with Respect to the U.S. General Insurance Industry*.

Sources:

RAND Institute for Civil Justice, "Changes in the Standards for Admitting Expert Evidence"

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

Solution:

- (a) Describe two tort reforms enacted in the United States. Include the purpose of each in the description.

Commentary on Question:

There are many examples of tort reforms enacted in the United States. Only two were required for full credit. The model solution is one possible full credit response that includes two examples of tort reforms enacted in the United States.

Joint and Several Liability: Allows even a minimally at fault defendant to pay more than its share of fault. The reform ensures that defendants minimally at fault do not pay more than their percentage of fault.

Collateral Source Rule: Disallows admission of evidence showing plaintiff's losses have been compensated by other sources. The reform permits awards to be reduced for collateral source payments.

- (b) Describe two indirect costs of the tort system related to general insurance.

Commentary on Question:

There are a number of indirect costs. Only two were required for full credit. The model solution is one possible full credit response that includes two indirect costs.

- Amounts spent to reduce potential liability claims
- Opportunity costs of products/services that are withdrawn from markets (or never introduced) due to concerns over potential liability claims

4. Continued

- (c) Identify two of the five factors, known as the “Daubert factors,” that judges take into account when evaluating the reliability, or scientific validity, of evidence.

Commentary on Question:

All five factors are listed below. Only two were required for full credit.

- whether it can be (and has been) tested
- whether it has been subjected to peer review and publication
- its known or potential rate of error
- the existence and maintenance of standards controlling the particular technique's operation
- whether it is generally accepted in the scientific community

5. Learning Objectives:

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

Learning Outcomes:

- (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.

Sources:

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

Solution:

- (a) Explain the rationale for government involvement in the provision of agriculture insurance.

Commentary on Question:

There are many potential full credit responses. The response did require addressing agriculture insurance specifically. One example of a full credit response is included.

It is in a nation's best interest to ensure that its agricultural producers operate in an efficient manner. Efficiency is enhanced by the use of risk management practices, including insurance. Some form of government involvement in the provision of agricultural insurance is necessary to ensure the availability and affordability of the coverage required by its agricultural producers with respect to combined peril/systemic risks.

- (b) Describe the main provision in the U.S. agricultural program that encourages producers to purchase agriculture insurance.

Producers must purchase at least basic coverage when it is available if they wish to be eligible for public disaster assistance payments.

- (c) Compare government involvement in the provision of terrorism insurance in the United States and France.

Commentary on Question:

The response must compare three aspects of the government involvement to earn full credit. There are many different aspects. One example of a full credit response with three aspects compared is included.

5. Continued

In the U.S.:

- U.S. Congress adopted Terrorism Risk Insurance Act (TRIA) in 2002.
- Government functions as a stand-by reinsurer if losses exceed a legislated threshold.
- Government can recoup loss amounts through mandated surcharges on insurance premiums.

In France:

- French government enacted GAREAT for 2002.
- GAREAT is a co-reinsurance pool including all licensed insurers in France.
- GAREAT has reinsurance protection with CCR (unlimited protection backed by government).

6. 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.

Sources:

Actuarial Standards of Practice

- No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves
- No. 41, Actuarial Communications

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

General Insurance Financial Reporting Topics, Society of Actuaries, Part 14 (Overview of the General Insurance Statement of Actuarial Opinion)

Commentary on Question:

Widely varying responses are possible for full credit. Grading of this type of question takes into account the clarity of the response in addition to the validity of the response. A full credit response requires four issues to be addressed. The following is an example of a full credit response addressing four issues. There are other issues in this scenario not addressed in the model solution that could be addressed in a full credit response.

Solution:

Assess your professional responsibilities in this scenario. Include in your assessment any applicable Actuarial Standards of Practice and guidance from the American Academy of Actuaries practice note on “Statements of Actuarial Opinion on Property and Casualty Loss Reserves.” Your assessment should address four issues.

The BSG appointed actuary assignment has a number of issues that need to be addressed. Some issues need to be considered before acceptance and while others would be considered after acceptance.

6. Continued

With this assignment there are four major issues regarding professional responsibilities that need to be addressed. They are:

1. Timing
2. Potential conflict of interest
3. Prior actuary/prior opinion
4. EIL claims

Regarding timing, there is not enough time to adequately review the prior report or replicate the analysis used in that report. BSG management made an attempt to alleviate the timing concerns by saying the full report would not need to be prepared for the early February Board meeting. BSG is not necessarily correct. The full Actuarial Report must be made available to the Board upon request as per the NAIC Statement of Actuarial Opinion Instructions. I would advise that the Board presentation needs to be delayed to the end of February allowing more time to properly prepare the report.

Regarding potential conflict of interest, the provision for the advance payment in the form of BSG stock options provides a potential financial inducement to manipulate the results so that the value of the stock options rises. It would be best to restructure the contract so that the advance payment is in the form of cash to avoid even the appearance of a conflict of interest. Furthermore, it appears that BSG would like to see lower reserve levels evidenced by setting the reserves at the low end of the range in the past and noting that they believed the prior actuary was too conservative. I would make it clear to BSG, before acceptance of the assignment, that the range of values I estimate will not be influenced by their desire for lower reserves, but rather sound actuarial practice.

Regarding the prior actuary, I would ask to see the letter from the prior actuary provided to the DOI to see if it corroborates the letter from BSG. I would also attempt to contact the prior actuary so that I could discuss BSG operations, the prior analysis and any outstanding issues. Furthermore, if the assignment is accepted, ASOP No. 36 requires disclosure of instances in which the actuary is unable to review the prior actuary's work. I would need to disclose that I did not have the time to replicate the methodologies and assumptions used by the prior actuary and as such do not know if the change in methodology is material.

If the assignment is accepted there is a professional responsibility with respect to the material level of EIL claims. I would need to consider if the EIL claims are actuarially estimable. If they are not, the scope of the report should exclude them and the category of opinion would then be Qualified as per ASOP No. 36. The EIL exposure may require a disclosure under mass tort exposure and if the EIL claims are actuarially estimable, it should be noted that there are significant risks or uncertainties that could result in material adverse deviation due to EIL (as noted by the significant increase in calendar year payments).

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.
- (1g) Demonstrate knowledge of taxation for general insurers in the U.S.

Sources:

General Insurance Financial Reporting Topics, Society of Actuaries

- Part 1 (Accounting Systems for General Insurers)
- Part 15 (Federal Income Taxes for General Insurers)

Solution:

- (a) Describe the purpose of deferred tax assets and liabilities (DTA/L) in financial reporting.

DTAs and DTLs arise from timing differences, not from permanent differences between tax and statutory accounting.

- (b) Compare the treatment of DTAs and DTLs in statutory accounting.

Both DTAs and DTLs are shown on the balance sheet, and the change in them is shown as a direct charge or credit to surplus for statutory accounting.

- (c) Describe the proration provision of the 1986 Tax Reform Act.

Insurers do not receive the full exemption for tax-exempt income. The proration provision of the 1986 Tax Reform Act adds 15% of tax-exempt income to their taxable income.

- (d) Describe the Dividends Received Deduction (DRD). Include the purpose of the DRD in your response.

DRD partly exempts common stock dividends from taxation to offset the effects of double/triple taxation.

7. Continued

- (e) Calculate the IRS loss reserve discount factor that applies to accident year 2013 at 48 months of development (i.e., as of December 31, 2016). Assume a 5% annual discount rate.

Commentary on Question:

A full credit response should show all calculations. The model solution is an example of the information required for full credit.

Accident Year	Months Developed	Paid (000)	Incurred (000)	Cumulative % Paid = (2)/(3)	Incremental % Paid = (4) differences ($AY_x - AY_{x+1}$)
	(1)	(2)	(3)	(4)	(5)
prior		200	200	100.0%	0.0%
2002	120	220	220	100.0%	0.0%
2003	108	240	240	100.0%	0.0%
2004	96	300	300	100.0%	2.0%
2005	84	294	300	98.0%	5.0%
2006	72	279	300	93.0%	8.0%
2007	60	272	320	85.0%	10.0%
2008	48	270	360	75.0%	
2009	36	234	360		
2010	24	190	380		
2011	12	100	400		

IRS loss reserve development factor at 48 months = B/A where

A = Sum of (5), Prior Years to 2007 = 25%

B = $10\%/1.05^{0.5} + 8\%/1.05^{1.5} + 5\%/1.05^{2.5} + 2\%/1.05^{3.5} = 23.3\%$

IRS loss reserve development factor at 48 months = B/A = $23.3/25 = 93.2\%$

8. 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:

- (1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.
- (1e) Understand and apply the concepts of reinsurance accounting.
- (4i) Understand the regulation of reinsurance.

Sources:

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

General Insurance Financial Reporting Topics, Society of Actuaries, Part 6 (Schedule F, Statutory Credit for Reinsurance)

NAIC 2012 Annual Statement

Solution:

- (a) Explain how the Dodd-Frank Act affects the state regulation of reinsurer solvency.

Commentary on Question:

The model solution is one example of a full credit response. The information within the parentheses in the model solution was not required for full credit.

The Dodd-Frank Act provides that states that are NAIC accredited (*or have financial solvency requirements substantially similar to those imposed by the NAIC*) are solely responsible for regulating the financial solvency of reinsurers domiciled in their state.

Further, no state may require a reinsurer to file financial information beyond that which the reinsurer is required to file with its domiciliary state.

- (b) Calculate LGI's total Schedule F provision for reinsurance.

Commentary on Question:

A full credit response should include the formulae and supporting calculations. The model solution is an example of the information required for full credit.

8. Continued

Strong: Unauthorized, not certified

- Provision for Strong = total recoverables – collateral + min[20%(overdue recoverables + amounts in dispute), collateral]
- $150-70+\min(20\%(24+11),70) = 87$

Power: Authorized

- Determine if slow paying: loss recoverables more than 90 days past due (on claims not in dispute) divided by the total loss recoverables (on claims not in dispute) plus the payments received in the past 90 days
- $20 / (70-10+3) = 0.32 > 0.2$, therefore slow paying
- Provision for Power: the greater of 20% of the unsecured recoverables and 20% of the (loss recoverables more than 90 days past due and amounts in dispute)
- $\text{Max}(20\% (150-10), 20\% (20+10)) = 28$

Forward: Unauthorized, Certified

- Determine state rating: S&P BBB+ -> Secure-5, AM Best A- -> Secure-4
- Take lower of the two: Secure-5 -> 75% required collateral
- Provision for Forward: calculation similar to slow paying authorized except replace 20% with 75%
- $\text{Max}(75\% (100-25), 75\% (10+5)) = 56$

Therefore total Schedule F provision is $87+28+56 = 171$.

9. Learning Objectives:

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

Learning Outcomes:

- (4j) Outline the function and regulation of captives.

Sources:

NAIC, "Recent Developments in the Captive Insurance Industry"

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

Commentary on Question:

Widely varying responses are possible for full credit. Grading of this type of question takes into account how clearly the information is presented in the response as well as the content of the response. The model solution shown is an example of a full credit response.

Solution:

Write a memo to the risk manager of Vandelay that assesses the plan for using a captive insurer. Your memo should consider the following issues:

- (i) Selection of the type of captive
- (ii) Selection of the jurisdiction of the captive
- (iii) Financial costs and benefits
- (iv) Tax implications

To: The Risk Manager of Vandelay

I have considered your plan for using a captive insurer as a means to control liability insurance costs. There are a number of issues to consider if Vandelay is to use captive insurance to meet its liability insurance needs. They include (i) selection of the type of captive, (ii) selection of the jurisdiction of the captive, (iii) financial costs and benefits of using captive insurance and (iv) tax implications.

9. Continued

- (i) *Selection of the Type of Captive:*

There exist a number of different types of captives including: Single-Parent, Group, Rent-A-Captive and Risk Retention Group (RRG). A single-parent captive would be the most expensive to form. Group and RRG captives would require some form of cooperation by competitors in the self-defense product industry (or industries with similar product liability concerns) which could create delays in implementation. I would recommend using a rent-a-captive as it would have lower start-up costs, be quick to implement and potentially benefit from lower reinsurance costs from the collective strength of the rent-a-captive selected.
- (ii) *Selection of the Jurisdiction of the Captive:*

Captives can be operated in a number of jurisdictions, both onshore (located within the United States) and offshore (located outside the United States). Key considerations for choice of domicile include: taxes, fee levels, experience, approval process and regulatory restrictions. Other considerations would include time zone differences, language and political stability. For offshore jurisdictions, one should consider the two most popular locations, Bermuda and the Cayman Islands. For onshore jurisdictions, Vermont is the leader. Ultimately, it would come down to the jurisdiction with the best available rent-a-captive option with reasonable fee levels.
- (iii) *Financial Costs and Benefits of Using Captive Insurance:*

Cost reduction is one of the main reasons for use of captive insurance. There are however other reasons such as increased control of risk and risk management; these benefits are difficult to measure financially but should be considered. It should be noted that insurance costs from a captive would be linked to Vandelay's own claims activity. However, the expenses (rent-a-captive fees) should be lower than the profit and expense load for conventional insurance and the price will be less affected by market conditions (though market conditions would affect the cost of the captive's reinsurance protection).
- (iv) *Tax Implications:*

Captives can be operated in tax havens such as Bermuda and the Cayman Islands. Tax havens each have their own corporate tax structures. For tax implications, one would need to examine the tax laws for the domicile of the captive including consideration of any applicable tax treaties with the U.S.

10. 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.
- (2f) Demonstrate knowledge of the E.U. Solvency II standard formula solvency capital requirement.
- (2h) Compare different solvency standards.

Sources:

General Insurance Financial Reporting Topics, Society of Actuaries, Part 12 (Solvency Monitoring)

Solution:

- (a) Describe each of the three pillars of Solvency II.

Commentary on Question:

The description should include an example of the information that is included for each Pillar. The model solution is an example of a full credit response.

Pillar 1:

- Quantitative measure of capital requirements
- Includes internal modeling and the Standard Formula for capital

Pillar 2:

- Supervisory review process, governance and risk management requirements
- Includes the ORSA report

Pillar 3:

- Supervisory reporting and transparency requirements
- Includes disclosures

- (b) Compare the method of computation and regulatory purpose for the following levels of required capital in Solvency II:
 - (i) Solvency Capital Requirement (SCR)
 - (ii) Minimum Capital Requirement (MCR)

Commentary on Question:

The model solution is an example of a full credit response. The information included within the parentheses was not required for full credit.

10. Continued

- (i) SCR:
- Computation is 99.5% VaR over 1 year either by Standard Formula or an internal model (*or combination*)
 - Purpose is if capital goes below SCR the regulator takes corrective action to restore capital to the SCR.
- (ii) MCR:
- Computation is 85% VaR, over 1 year with a value normally between 25% and 45% of the SCR (*subject to a specified minimum amount*)
 - Purpose is if capital goes below MCR, the regulator is to instigate liquidation of the insurer.
- (c) Compare the treatment of correlation of risk charges between categories of risk under NAIC RBC and the Solvency II SCR Standard Formula.

Commentary on Question:

There are numerous comparisons that can be made. The model solution is an example of a full credit response.

RBC indirectly accounts for correlation using the square root formula so that the total RBC charge is less than the sum of the component risk charges. No statistical measures of correlation are used.

SCR Standard Formula makes explicit use of correlation between risk categories. Standard correlation is not used; correlations are based on the tail of the distribution.

- (d) Calculate the RBC ratio for Borr and identify the action level that results from this. Specify any actions of Borr and the regulator that are indicated at this action level.

Commentary on Question:

A full credit response should include the formulae and supporting calculations. The model solution is an example of the information required for full credit.

The reserving risk charge > combined credit risk charge ($14 > (6+2)$).

Therefore:

- $R_4 = \text{reserving risk charge} + 50\% \text{ reinsurance credit risk charge} = 14+3 = 17$
- $R_3 = \text{non-invested assets credit risk charge} + 50\% \text{ reinsurance credit risk charge} = 2+3 = 5$

10. Continued

Given: $R_0 = 4$, $R_1 = 3.5$, $R_2 = 5$, $R_5 = 13.5$

RBC =

$$R_0 + \left[\sum R_i^2 \text{ for } i=1 \text{ to } 5 \right]^{0.5} = 4 + [12.25+25+25+289+182.25]^{0.5} = 27.1$$

ACL = 50% of RBC = 13.55

$$\text{RBC Ratio} = \text{Total Adjusted Capital} / \text{ACL} = (22-1)/13.55 = 1.55$$

This is the Company Action Level.

- Company must submit a plan to the insurance commissioner.
- No action is indicated of the regulator at this action level.

11. 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) 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).
- (1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.

Sources:

General Insurance Financial Reporting Topics, Society of Actuaries, Part 8 (Measuring Total Income for General Insurers)

Solution:

- (a) Describe two items that complicate the derivation of total income by line of business for general insurers.

Commentary on Question:

There exist a number of items that complicate the derivation of total income by line of business for general insurers. The model solution is one example of a full credit response.

Assets generate income for business written but they are not linked to lines of business.

Calendar year investment income is earned from business written over prior accident years.

- (b) Compare the allocation of surplus and capital to a line of business in the Insurance Expense Exhibit (IEE) procedure with that used in pricing a line of business.

Commentary on Question:

There exist a number of areas to compare. Three areas of comparison were required for full credit. The model solution is an example of a full credit response.

In the IEE, surplus is allocated to line of business using leverage ratios. Pricing for a line of business need not use allocated surplus; it can use required capital for the block of business being priced.

11. Continued

IEE allocation does not consider the riskiness of the line of business. Pricing can use a risk measure such as TVaR or RBC capital reflecting the riskiness of the block of business.

IEE allocation depends on balance sheet and income statement items all arising from prior written business. Pricing considers only investment income for the current business written and the capital to support it.

- (c) Calculate the following amounts for Nifty's 2013 IEE:
- (i) Investment Gain on Funds Attributable to Insurance Transactions for Homeowners
 - (ii) Capital and Surplus allocated to Homeowners

Commentary on Question:

A full credit response should include the formulae and supporting calculations. The model solution is an example of the information required for full credit.

IGIT = Investment Gain on Funds Attributable to Insurance Transactions

IGCS = Investment Gain on Capital and Surplus

IGR = Investment Gain Ratio

PHS = Policyholder Surplus LR = Loss reserves

WP = Written premium UEPR = Unearned premium reserves

AB = Agents' balances PPE = Prepaid expenses

HO = Homeowners lob = line of business

(i) $IGIT_{lob} = IGR (LR_{lob} + UEPR_{lob} \times [1 - (PPE_{lob} / WP_{lob})]) - AB_{lob}$
 $IGIT_{HO} = 7\% (\text{average}((1,500+80+250), (1,640+90+290)) + \text{average}(3,200,3300)[1 - 20\%] - \text{average}(600,650))$
 $IGIT_{HO} = 7\% (1,925 + 80\%(3,250) - 625) = 273$

(ii) $IGCS_{lob} = IGR (LR_{lob} + UEPR_{lob} + PHS_{lob} - AB_{lob}) - IGIT_{lob}$
 $IGCS_{HO} = 520$ is given
Therefore $520 = 7\% (1,925 + 3,250 + PHS_{HO} - 625) - 273$
 $PHS_{HO} = (520 + 273) / .07 - 4,550 = 6,779$

12. 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.

Sources:

NAIC Statement of Statutory Accounting Principles 9, "Subsequent Events"

NAIC Statement of Statutory Accounting Principles 53, "Property Casualty Contracts-Premiums"

Solution:

- (a) Define Type I and Type II material subsequent events as noted in SSAP No. 9, *Subsequent Events*, and compare their treatments in statutory financial statements.

Commentary on Question:

A full credit response needs to clearly indicate the distinction between Type I and Type II.

Type I - Recognized Subsequent Events: Events or transactions that provide additional evidence with respect to conditions that existed at the date of the balance sheet.

Type II - Nonrecognized Subsequent Events: Events or transactions that provide evidence with respect to conditions that did not exist at the balance sheet date but arose after that date.

For material Type I subsequent events, the nature and the amount of the adjustment shall be disclosed in the notes to the financial statements only if necessary to keep the financials from being misleading.

Material Type II subsequent events shall not be recorded in the financial statements, but shall be disclosed in the notes to the financial statements, including the nature of the event and its financial effect.

- (b) Describe two methods that can be used for the computation of the unearned premium reserve as noted in SSAP No. 53, *Property Casualty Contracts-Premiums*.

Commentary on Question:

While there are other methods, only two are noted in SSAP No. 53 and both are required for full credit.

12. Continued

Daily pro rata method

- Calculate the unearned premium on each policy.
- At the end of each period, the calculation is made on each item of premium to ascertain the unexpired portion and to arrive at the aggregate unearned premium reserve.

Monthly pro rata method

- Calculate the unearned premium assuming that, on average, the same amount of business is written each day of any month (so that the mean will be the middle of the month).

- (c) Describe the statutory financial treatment of advance premiums.

Advance premiums are reported as a liability in the statutory financial statement and not considered income until due. These amounts are not included in written premium or the unearned premium reserve.

13. 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 1 (Contract Law: Insurance Applications), Assignment 2 (Tort Law) and Assignment 3 (The International Legal Environment)

Solution:

- (a) Explain the difference between a representation and a warranty on an insurance application.

Representations are inducements to contract, and misrepresentations must be proven to be material for a contract to be voidable.

Warranties are part of the final insurance contract, are presumed to be material, and their breach makes the contract voidable.

- (b) Explain the difference between an express warranty and an implied warranty in product liability law and provide an example of each of them.

Commentary on Question:

There are many appropriate examples that can be provided for both an express warranty and an implied warranty. The model solution includes one example of each as a guide to the extent of detail required for a full credit solution.

An express warranty is an explicit statement about a product made by the seller that the buyer or other user may rely on and that provides a remedy in the event the product does not perform as claimed.

Example: A company manufactures headphones for children that it claims limits sounds to levels that will not impair hearing in those using them. This claim constitutes an express warranty.

An implied warranty is an obligation that the courts impose on a seller to warrant certain facts about a product even though not expressly stated by the seller.

Example: A company produces a power saw with blade guard to protect the user. There is an implied warranty that the design of the blade guard actually protects the user when it is being used in an expected manner.

13. Continued

- (c) Explain the difference between public international law and private international law.

Public international law concerns the interrelation of nation states and is governed by treaties and other international agreements.

Private international law involves disputes between individuals or corporations in different countries.

14. 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.

Sources:

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

General Insurance Financial Reporting Topics, Society of Actuaries, Part 5 (Accounting for Reinsurance Contracts) and Part 9 (Notes to Financial Statements)

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

Solution:

- (a) Explain the appropriateness of each of the three risk measures noted above and select a preferred risk measure for GGI. Justify your selection.

Commentary on Question:

The selected appropriate risk measure can be expected reinsurer deficit (ERD) or a measure based upon a multiple of right-tailed deviation (RTD). However, full credit depends on the justification provided.

10-10 rule: Treaty must have a 10% chance of a 10% loss to have adequate risk transfer under this measure.

ERD: This is probability of a loss x average severity of a loss when it occurs divided by premium (often use 1% ERD to denote adequate risk transfer).

Multiple of RTD: This measure makes use of distributional transforms that have benefits over ERD in measuring risk transfer, but with the drawback of added complexity.

I select the ERD measure as most appropriate to use for GGI for the following reasons:

- The proportional treaty has a narrow commission slide so the reinsurance essentially follows the fortunes of the primary insurer. If the primary book is deemed to be insurance, then a proportional treaty on it is a transfer of risk. (No risk measure is needed because the NAIC requires risk transfer testing only when the risk transfer is not self-evident.)

14. Continued

- The catastrophe excess-of-loss treaty does require a measure of risk. This type of reinsurance involves low frequency, high severity events.
- 10-10 does not look at the tail of the distribution. It is not appropriate because it does not recognize risk transfer provided by catastrophe treaties.
- Both ERD and multiple of RTD can measure risk from low frequency, high severity events.
- The multiple of RTD, while potentially more accurate than ERD, is more complex to apply in practice and is difficult to explain to the users of financial statements.
- ERD should adequately measure risk transfer in the catastrophe excess-of-loss treaty.

- (b) Select the appropriate statutory accounting treatment of GGI's quota share treaty if it had included a loss payment schedule that defers loss recoverable payments for several years. Justify your selection.

NAIC Statement of Statutory Accounting Principles 62 notes that payment schedules are contractual features designed to delay the timing of reimbursement to the ceding entity. Any feature that can delay timely reimbursement violates the conditions for reinsurance accounting. Therefore, deposit accounting would be appropriate.

- (c) Explain how quota share treaties, accounted for as reinsurance, provide statutory surplus relief.

Ceding commissions from quota share reinsurance reduce net commission expense. They offset the surplus strain at policy inception from prepaid expenses. This effect is called surplus relief.

- (d) Describe the information included in this note that allows one to determine the surplus relief provided by reinsurance.

The ceding insurer reports the return commission due the reinsurer if all reinsurance were canceled.

The note shows unearned premium reserve (UPR) and commission equity for reinsurance (assumed, ceded and net where net is [assumed – ceded]). The commission equity is the UPR times the ceding commission rate.

15. 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:

NAIC, "Insurance Regulatory Information System (IRIS) Ratios Manual"

General Insurance Financial Reporting Topics, Society of Actuaries, Part 14 (Overview of the General Insurance Statement of Actuarial Opinion)

Solution:

- (a) Calculate IMSIC's Two-Year Overall Operating Ratio (IRIS Ratio 5) for 2013.

Commentary on Question:

A full credit response should include the formula and supporting calculations. The model solution is an example of the information required for full credit.

$$\text{IRIS 5} = 2 \text{ Year Loss Ratio (LR)} + 2 \text{ Year Expense Ratio (XR)} - 2 \text{ Year Investment Income Ratio (IIR)}$$

$$2 \text{ Year LR} = (75.8+100+15.75+23.55+0.4+0.15) / (116.1+128.2) = 88.3\%$$

$$2 \text{ Year XR} = (29.55+20) / (224 +225+8.2+6-117.5-108) = 20.8\%$$

$$2 \text{ Year IIR} = (11.2+8.4) / (116.1+128.2) = 8.0\%$$

$$\text{IRIS 5} = 88.3\% + 20.8\% - 8.0\% = 101.1\%$$

- (b) Propose a recommendation to your supervisor regarding the results of IMSIC's IRIS ratios as calculated in part (a) and as provided in the table of ratios. Include with your recommendation an assessment of the results, potential reasons for the results and any potential revisions to the ratios.

Commentary on Question:

Widely varying responses are possible for full credit. The model solution is an example of the information required for full credit.

15. Continued

Of the 6 IRIS ratios calculated, IMSIC fails 5.

- IRIS 1 is under 900 so it is a pass.
- IRIS 2 is over 300 so it is a fail.
- IRIS 11 is over 20 so it is a fail.
- IRIS 12 is over 20 so it is a fail.
- IRIS 13 is over 25 so it is a fail.
- IRIS 5 is over 100 so it is a fail.

The number of exceptional scores on IRIS tests for IMSIC is a warning of potential financial weakness. A financial examination is likely indicated.

The issue of the high premium to surplus ratio (IRIS 2) is compounded by apparent reserve deficiency as noted by failing IRIS 11, 12 and 13 and the fact that the business is not profitable (fail of IRIS 5 due to a high loss ratio).

IMSIC surplus has grown but this is due to capital gains. It may be a one-time event.

This company appears to be in poor financial health and requires further investigation immediately. An on-site examination is recommended.

Further investigation should entail determining if the poor results/reserve inadequacy are due to specific lines of business/policy years. Also, there is a need to:

- examine the results of other IRIS ratios, for example IRIS 4 (to determine the effect of surplus aid)
- examine the RBC level for IMSIC
- look at its management planning/ORSA reports if they are available
- review the statement of actuarial opinion for IMSIC focusing on the appointed actuary's comments regarding IRIS results, reserve adequacy and adverse development

16. 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.
- (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.

Sources:

General Insurance Financial Reporting Topics, Society of Actuaries, Part 7 (Statutory Loss Accounting and Schedule P)

NAIC 2012 Annual Statement

Solution:

- (a) Evaluate how the escrow account should be settled.

Commentary on Question:

A full credit solution needs to show that the 2 year development was greater than \$1 million and indicate that the amount to be paid to Seabrook is \$1 million as per the contract.

Need the 2 year development (from Dec. 31, 2010 to Dec. 31, 2012 for accident years up to 2010)

- Column 10 - column 8 for years up to and including 2010

$$\begin{aligned} \text{2 year development (\$000)} &= ((1,289-1,285)+(6,377-6,368)+(5,919- \\ &5,901)+(4,831-4,822)+(5,225-5,172)+(6,419-6,387)+(7,294-7,120)+(7,562- \\ &7,231)+(8,778-8,016)) = 4+9+18+9+53+32+174+331+762 = 1,392 \\ \text{2 year development} &= \$1,392,000 \end{aligned}$$

Given that this is greater than the maximum of \$1 million, the escrow agent is to pay Seabrook \$1 million.

- (b) Describe any issues that might occur in an evaluation of the escrow account if Hawk's reserves included nontabular discounting. If there are no issues, explain why that is so.

Schedule P Part 2 is gross of nontabular discounting. As such, the evaluation cannot be done directly from Schedule P Part 2 because nontabular discounting is not considered in the development.

16. Continued

- (c) Describe any issues that might occur in an evaluation of the escrow account if Hawk's reserves included tabular discounting. If there are no issues, explain why that is so.

Schedule P Part 2 is gross of tabular discounting. As such, the evaluation cannot be done directly from Schedule P Part 2 because tabular discounting is not considered in the development.

- (d) Describe any issues that might occur in an evaluation of the escrow account if, after Seabrook's purchase of Hawk, Hawk was included in an intercompany pooling arrangement with Seabrook. If there are no issues, explain why that is so.

Commentary on Question:

A full credit solution needs to indicate the issues that would occur due to the re-stated pooling of data.

After the purchase, Seabrook combined Hawk's results with its own results through the pooling arrangement. After doing so Seabrook had to restate Schedule P – Part 2 so as to contain historical pooled data.

The pooled development cannot be used to determine the loss reserve development from the time of the sale. Seabrook would need to keep an "unpooled" version of Schedule P showing only Hawk's development.

- (e) Describe the purpose of the following Schedule P parts:

(i) Schedule P - Part 6

(ii) Schedule P - Part 7

Commentary on Question:

The information within the parentheses in the model solution was not required for full credit.

(i) Part 6: Shows historical triangles of exposure year premiums (*which is important for lines of business where premiums are affected by retrospective rating adjustments, exposure audits, or accounting lags in booking premiums*).

(ii) Part 7: Provides premium and loss information for loss-sensitive contracts.

17. 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.
- (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)

Zeppieri, L., "Res Ipsa Loquitor in Medical Malpractice Cases"

Solution:

- (a) Explain how *negligence per se* modifies the proof of negligence concept.

Negligence per se applies for an act that is considered inherently negligent because of a violation of a law (or an ordinance).

Proof that defendant violated the statute is sufficient to establish liability under *negligence per se*.

- (b) Identify which of these three elements was addressed. Include in your response the reason it was addressed.

The first element was addressed. It was held that if an expert was required for this element then *res ipsa loquitor* couldn't apply because a jury could not use common understanding to apply it. This precluded its use in medical malpractice cases because expert testimony is generally required.

- (c) Explain the modification to this element in the 2003 Court of Appeals ruling.

Commentary on Question:

A full credit response needs to note that an expert could be used in "res ipsa loquitor" to enhance common understanding.

The Court of Appeals modified the rule in that it held that an expert can now be used to "bridge the gap" between what lay jurors know and the specialized knowledge needed to understand what is commonly accepted by physicians.

17. Continued

- (d) Describe the issues regarding proof of negligence in the case described. Include in your response the potential applicability of:
- (i) *Negligence per se*
 - (ii) *Res ipsa loquitor*

Commentary on Question:

Widely varying responses are possible for full credit. Grading of this type of question takes into account how clearly the information is presented in the response as well as the content of the response. One model solution is shown as an example of a full credit response.

Regarding *negligence per se*, Clearview would have to show that SSC violated the law in its fracking operations and the violation must be perceived by a judge to be inherently negligent.

The facts, as presented, do not indicate that SSC violated any laws regarding the fracking operations. Therefore it is not likely that *negligence per se* can be used to prove negligence.

Regarding *res ipsa loquitor*, Clearview needs to:

1. get expert testimony to show that the water contamination could not have occurred in the absence of some negligence;
2. show that SSC fracking is the only likely instrumentality for the water contamination (and resulting illnesses); and
3. show that Clearview did not contribute to the contamination.

1 and 2 are possible especially if there are toxic chemicals used in fracking that are not naturally occurring and are the major contaminants in the water. 3 does not appear to be an issue as there is no suggestion that Clearview contributed to the contamination. Therefore, if 1 to 3 are clear, application of *res ipsa loquitor* to prove negligence is possible.

If, however, SSC can show that most of the contaminants are natural to the area (or not in the fracking fluid) then *res ipsa loquitor* cannot be used to prove negligence. In this instance, Clearview will need to directly prove negligent acts by SSC as the cause of contamination. For example,

- SSC having inadequate procedures to check for naturally occurring methane deposits,
- SSC having inadequate procedures for collecting fluids used in fracking, or
- improper storage of fracking fluids by SSC.

18. 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.
- (4d) Discuss market conduct regulation.

Sources:

Insurance Regulation, The Institutes, Chapter 2 (Development of Insurance Regulation), Chapter 7 (Underwriting Regulation) and Chapter 8 (Rate Regulation)

Solution:

- (a) Explain why the McCarran-Ferguson Act was necessary to affirm the right of states to regulate insurance.

Commentary on Question:

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

In the SEUA case in 1944, the U.S. Supreme Court determined that insurance was commerce under the Constitution's Commerce Clause and was subject to federal regulation (including antitrust laws). The McCarran-Ferguson Act moved regulation back to the states. It was deemed to be in the public interest to have state regulation of insurance.

- (b) Describe two ways that regulation can accomplish this.

Commentary on Question:

There are many possible ways that regulation can accomplish this. The model solution shows four ways. Only two ways were required for full credit.

- constraints on the ability to accept, modify or decline loss exposures
- requirements for policy wording
- limits on allowable classifications
- restrictions on the timing and conditions of coverage cancellations and non-renewals

- (c) Identify a rate regulation approach between these two extremes.

Commentary on Question:

There are several types of rate regulation between the two extremes (e.g., file-and-use, use-and-file, flex rating). Only one was required for full credit.

18. Continued

Flex rating

- (d) Select one approach to rate regulation and provide an argument in favor of it. Include a rebuttal to at least one common criticism of the approach selected.

Commentary on Question:

Widely varying responses are possible for full credit. Grading of this type of question takes into account how clearly the information is presented in the response as well as the content of the response. The model solution shown is one example of a full credit response.

I have selected flex rating. Flex rating requires prior approval only if the new rates exceed the current rates by some percentage threshold. Use of flex rating is not as onerous as prior approval rate regulation since the threshold can be set so that only a small portion of rate changes in any given year will require the full prior approval process. By limiting the full prior approval process, companies can reduce expenses and implement many changes swiftly; regulators can focus resources and efforts on rate changes that are potentially disruptive to policyholders and the insurance market.

A common criticism of flex rating is that the open markets should determine rates, not prior approval rate regulation systems such as flex rating that decrease the efficiency of the competitive market. However, open market competition has its flaws: the market may not be fully competitive, allowing for potentially excessive or inadequate rates, and open market competition could create availability/affordability problems for protected classes. Flex rating can provide the benefits of both prior approval and open competition, limiting rate filing costs with an appropriately selected threshold.

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.
- (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:

Actuarial Standards of Practice

- No. 21, Responding to or Assisting Auditors or Examiners in Connection with Financial Statements for All Practice Areas
- No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves
- No. 41, Actuarial Communications

American Academy of Actuaries, "A Public Policy Practice Note, Statements of Actuarial Opinion on Property and Casualty Loss Reserves," Committee on Property and Liability Financial Reporting

American Academy of Actuaries, "Materiality, Concepts on Professionalism"

General Insurance Financial Reporting Topics, Society of Actuaries, Part 14 (Overview of the General Insurance Statement of Actuarial Opinion)

Solution:

- (a) Explain what is required of the appointed actuary regarding the Actuarial Opinion Summary if the five-year historical exhibit reveals one-year loss development in excess of 5% of surplus in at least three of the past five calendar years.

Commentary on Question:

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

Where there has been one-year adverse development in excess of 5% of surplus in at least three of the past five calendar years, the appointed actuary must include explicit descriptions of the reserve elements or management decisions which were the major contributors.

19. Continued

- (b) Explain your professional responsibilities regarding the Statement of Actuarial Opinion in this situation giving consideration to any applicable Actuarial Standards of Practice and the American Academy of Actuaries practice note on “Statements of Actuarial Opinion on Property and Casualty Loss Reserves.”

Commentary on Question:

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

For the purposes of the Actuarial Opinion, the differences are material because it is the standard selected by the actuary that applies.

The Appointed Actuary (AA) relies on Schedule P data and must disclose said reliance in the SCOPE section of the report. ASOP No. 41 requires that the AA state any reliance on others for sources of data.

If the AA cannot resolve to his or her satisfaction why the Schedule P data is inconsistent, then the American Academy Public Policy Practice Note states that the AA may issue a statement of no opinion. A statement of no opinion should include a description of the reasons why no opinion is given.

Alternatively, the AA can (if given adequate time) determine the reason(s) for the inconsistency and then adjust the data appropriately so that it is consistent with Schedule P Part 1. The adjusted data can then be used for the analysis.

- (c) Explain your responsibilities regarding this request from the auditor.

As per Actuarial Standard of Practice No. 21, the responding actuary should be responsive to the auditor’s reasonable requests. Furthermore, any information received by the auditor’s reviewing actuary should be considered confidential.

- (d) Explain the reasons why the auditor’s materiality standard can be different from the actuary’s materiality standard.

- Auditors may select a materiality level without first communicating with the actuary.
- Auditors of an insurance company attest to the:
 - existence and value of assets (large numbers that are usually comparable with reserves, at least in the aggregate); and
 - premium data and expenses (which, by contrast, tend to be relatively smaller numbers, especially at the policy or contract level).

It may be that auditors do not always use the same level of materiality when making these attestations.

20. 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)”

Commentary on Question:

Widely varying responses are possible. A full credit response was expected to include five points to consider. Grading for this question took into account how clearly the points were presented in the response as well as the content of the response.

Solution:

Write a memo to your manager describing any concerns that you have and any additional information about the process that you would need in order to draw more definitive conclusions.

To: Manager

I have performed a limited review of the company’s standard procedure for using credit-based insurance scores and have the following observations:

- With respect to consent, obtaining a credit score on each adult member of the household is problematical unless each individual gives consent.
- Any request for consent must be clear and understandable to ensure that customers know specifically what they are consenting to and the consent received may need to be in written form. I recommend a detailed review of the company’s consent process.
- Using income as part of the scoring process may not be allowed. I recommend checking any applicable regulations pertaining to automobile insurance in the company’s jurisdiction to ensure it is permissible.
- Updating scores only every three years is probably not often enough to satisfy regulatory concerns for protecting policyholders. I recommend changing the current practice to an annual update of scores.
- Storing credit-based insurance scores in address records raises privacy issues for financially sensitive policyholder information. I recommend changing this practice. Credit-based insurance scores should be stored in their own field or database with appropriate security measures to safeguard financially sensitive policyholder information.

20. Continued

This review was limited by time and information. I have made note of a number of areas of concern that could invite regulatory scrutiny. There are likely other issues in addition to the ones I have noted. I recommend a detailed review of the company's use of credit-based insurance scores to ensure that it complies with all applicable regulations and does not include features that would concern regulators.

21. Learning Objectives:

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

Learning Outcomes:

- (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"

Solution:

- (a) Describe the two methods for calculating PDLR ratios and identify the preferred method when the retrospective rating parameters change significantly over time.

Formula approach: uses the retro parameters used by the retrospective rated policies to derive the PDLR ratios

Empirical approach: uses historical booked premium development and reported loss development to estimate the PDLR ratios

The formula approach is favored when parameters change significantly over time.

- (b) Calculate the premium asset on retrospectively rated policies as of December 31, 2013 arising from policy years 2010, 2011 and 2012.

Commentary on Question:

A full credit response should show all calculations. The model solution is an example of the information required for full credit.

First, calculate the CPDLR Ratios.

1. Estimate incremental % loss emerged.
 - Emergence pattern 1st: $81,000/103,000 = 78.6\%$, 2nd: $93,000/105,000 = 88.6\%$, 3rd: 100%
 - incremental % loss emerged, 1st: 78.6%, 2nd: 10.0%, 3rd: 11.4%
2. PDLR x incremental % loss emerged.
 - 1st: $1.416 (78.6\% \times 1.8)$, 2nd: $0.070 (10.0\% \times 0.7)$, 3rd: $0.046 (11.4\% \times 0.4)$
3. Upward accumulation of 2.
 - 3rd 0.046, 2nd 0.115, 1st 1.531
4. Upward accumulation of 1.
 - 3rd 11.4%, 2nd 21.4%, 1st 100%
5. CPDLR = 3. / 4.
 \Rightarrow 1st 1.531, 2nd 0.539 ($0.115/21.4\%$), 3rd 0.400 ($0.046/11.4\%$)

21. Continued

Second, calculate Expected Future Loss Emergence for each year
= Ultimate Losses – Losses Reported at Prior Retro Adjustment.

2010: 12,000 (105-93)

2011: 22,000 (103-81)

2012: 126,000

Third, calculate Expected Future Premium for each year

= Expected Future Loss Emergence \times CPDLD.

2010: 4,800 (12,000 \times 0.400)

2011: 11,869 (22,000 \times 0.539)

2012: 192,876 (126,000 \times 1.531)

Fourth, calculate Expected Total Premium

= Premiums Booked from Prior Adjustment + Expected Future Premium

= 151,000 + 147,000 + 4,800 + 11,869 + 192,876 = 507,545.

Premium Asset = Expected Total Premium - Premium Booked as of 12/31/13

= 507,545 - (152,000 + 149,000 + 191,000)

= 507,545 - 492,000

= 15,545.

22. Learning Objectives:

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

Learning Outcomes:

- (4d) Discuss market conduct regulation.

Sources:

Insurance Regulation, The Institutes, Chapter 7 (Underwriting Regulation)

Solution:

- (a) Determine whether the following conditions are typically sufficient for the insurer to cancel a personal automobile policy that has been in force for more than 60 days.
 - (i) The policyholder did not pay the premium.
 - (ii) The policyholder made a misrepresentation in the policy application.
 - (iii) The license of the policyholder's spouse was suspended.
 - (iv) The policyholder relocated to a state in which the insurer is not licensed.

Commentary on Question:

A full credit response should state assumptions where necessary. The model solution is an example of the information required for full credit.

- (i) Yes, it is sufficient.
 - (ii) No, it is not sufficient unless the misrepresentation is material.
 - (iii) Yes, it is sufficient assuming the spouse resides in the household of the policyholder.
 - (iv) Yes, it is sufficient.
- (b) Determine whether the situations are considered unfair trade practices with respect to underwriting.

Different premium rates/same class in different geographic regions:

- unfair trade practice only if not actuarially indicated

Amount of insurance varies by marital status:

- unfair trade practice

Refuse to renew based on mental impairment:

- unfair trade practice

22. Continued

Refuse to insure based on refusal by another insurer:

- unfair trade practice

- (c) Describe two factors that a state insurance department should consider when deciding which major insurers to schedule for a market conduct examination.

Commentary on Question:

There are a number of factors that a state insurance department should consider. The model solution below includes four factors. Only two factors were required for full credit.

Complaints:

- If an insurer has an unusually high complaint ratio or has had a significant increase in the number of complaints received, the department of insurance (DOI) may schedule that insurer for an examination.

Insurer Changes:

- DOIs may select for examination insurers that have undergone significant changes, such as a change in management or a substantial change in premium volume.

Regulatory Changes:

- Recent changes to state statutes or regulations may have affected certain lines of insurance, and the DOI may focus on the insurers that sell those lines.

Insurer's History:

- The passage of time since an insurer was last examined may point to a need for an examination.

- (d) Describe the process used by the team of examiners in performing a market conduct examination.

Commentary on Question:

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

Examiners will review a variety of documents to familiarize themselves with the insurer's operations. The review includes the insurer's financial statements in order to assess its financial condition which can affect its market conduct activities.

Examiners review the insurer's business records, including its policies and procedures manuals and related materials. Examiners also review the results of previous examinations of the insurer and note problem areas that they should reexamine.