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Exam 7-United States

Annual Statement,
Taxation, and Regulation

May 4, 2010

4 HOURS

INSTRUCTIONS TO CANDIDATES

1. This 100 point examination consists of 37 problem and essay questions.
2. For the problem and essay questions, the number of points for each full question and part of a question is indicated at the beginning of the question or part. Answer these questions on the lined sheets provided in your Examination Envelope. Use dark pencil or ink. Do not use multiple colors.
 - Write your Candidate ID number and the examination number, 7US, at the top of each answer sheet. Your name, or any other identifying mark, must not appear.
 - Do not answer more than one question on a single sheet of paper. Write only on the front lined side of the paper – **DO NOT WRITE ON THE BACK OF THE PAPER.** Be careful to give the number of the question you are answering on each sheet. If your response cannot be confined to one page, please use additional sheets of paper as necessary. Clearly mark the question number on each page of the response in addition to using a label such as “Page 1 of 2” on the first sheet of paper and then “Page 2 of 2” on the second sheet of paper.
 - The answer should be concise and confined to the question as posed. When a specified number of items are requested, do not offer more items than requested. For example, if you are requested to provide three items, only the first three responses will be graded.
 - In order to receive full credit or to maximize partial credit on mathematical and computational questions, you must clearly outline your approach in either verbal or mathematical form, showing calculations where necessary. Also, you must clearly specify any additional assumptions you have made to answer the question.
3. Do all problems until you reach the last page of the examination where "END OF EXAMINATION" is marked.

All questions should be answered according to the United States statutory accounting practices and principles, unless specifically instructed otherwise. SAP refers to Statutory Accounting Principles, and GAAP refers to Generally Accepted Accounting Principles. NAIC refers to the National Association of Insurance Commissioners.

CONTINUE TO NEXT PAGE OF INSTRUCTIONS

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4. Prior to the start of the exam you will have a **fifteen-minute reading period** in which you can silently read the questions and check the exam booklet for missing or defective pages. A chart indicating the point value for each question is attached to the back of the examination. Writing will NOT be permitted during this time and you will not be permitted to hold pens or pencils. You will also not be allowed to use calculators. The supervisor has additional exams for those candidates who have defective exam booklets.
5. Your Examination Envelope is pre-labeled with your Candidate ID number, name, exam number and test center. Do not remove this label. Keep a record of your Candidate ID number for future inquiries regarding this exam.
6. Candidates must remain in the examination center until two hours after the start of the examination. The examination starts after the reading period is complete. You may leave the examination room to use the restroom with permission from the supervisor. To avoid excessive noise during the end of the examination, candidates may not leave the exam room during the last fifteen minutes of the examination.
7. At the end of the examination, place all answer sheets in the Examination Envelope. Please insert your answer sheets in your envelope in question number order. Insert a numbered page for each question, even if you have not attempted to answer that question. Nothing written in the examination booklet will be graded. Only the answer sheets will be graded. Also place any included reference materials in the Examination Envelope. **BEFORE YOU TURN THE EXAMINATION ENVELOPE IN TO THE SUPERVISOR, BE SURE TO SIGN IT IN THE SPACE PROVIDED ABOVE THE CUT-OUT WINDOW.**
8. If you have brought a self-addressed, stamped envelope, you may put the examination booklet and scrap paper inside and submit it separately to the supervisor. It will be mailed to you. Do not put the self-addressed stamped envelope inside the Examination Envelope.

If you do not have a self-addressed, stamped envelope, please place the examination booklet in the Examination Envelope and seal the envelope. You may not take it with you. Do not put scrap paper in the Examination Envelope. The supervisor will collect your scrap paper.

Candidates may obtain a copy of the examination from the CAS Web Site.

All extra answer sheets, scrap paper, etc. must be returned to the supervisor for disposal.
9. Candidates must not give or receive assistance of any kind during the examination. Any cheating, any attempt to cheat, assisting others to cheat, or participating therein, or other improper conduct will result in the Casualty Actuarial Society disqualifying the candidate's paper, and such other disciplinary action as may be deemed appropriate within the guidelines of the CAS Policy on Examination Discipline.
10. The exam survey is available on the CAS Web Site in the "Admissions/Exams" section. Please submit your survey by May 24, 2010.

END OF INSTRUCTIONS

EXAM 7 – UNITED STATES, SPRING 2010

1. (2.5 points)

a. (2 points)

For each of the following legal concepts, briefly describe an automobile accident scenario in which the legal concept might apply and how it would impact whether the driver is liable for damages.

i. Last clear chance

ii. Assumption of risk

iii. Pure comparative system

iv. Mixed comparative system

b. (0.5 point)

For “assumption of risk,” briefly describe two criteria that courts might use to determine whether this is an enforceable defense of negligence.

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EXAM 7 – UNITED STATES, SPRING 2010

2. (1.75 points)

An individual is injured in an automobile accident.

a. (1 point)

Briefly describe the injured individual's right to sue under each of the following:

- i. A pure no-fault plan
- ii. A modified plan
- iii. An add-on plan
- iv. A choice no-fault plan

b. (0.25 point)

Briefly describe the types of benefits that might be provided to the injured party from the injured party's own insurer in an add-on plan or modified plan.

c. (0.5 point)

Describe an insurer's subrogation rights in the majority of no-fault states.

EXAM 7 – UNITED STATES, SPRING 2010

3. (1.5 points)

a. (0.5 point)

Briefly describe two trends specific to asbestos litigation that affect the total amount an insurer would pay for defense costs.

b. (0.5 point)

Briefly describe two concerns of either insurers or the public with a no-fault trust fund approach to settling asbestos claims.

c. (0.5 point)

Briefly describe two judicial or legislative state reforms affecting the asbestos tort claim process.

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EXAM 7 – UNITED STATES, SPRING 2010

4. (2 points)

Consider the simple unilateral care model.

a. (0.5 point)

Describe how litigation costs affect incentives for the injurer to provide optimal care in a negligence system

b. (0.5 point)

Describe how litigation costs affect incentives for the injurer to provide optimal care in a strict liability system.

c. (1 point)

Contrast how legal errors affect incentives for the injurer to provide optimal care in a negligence system vs. a strict liability system.

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EXAM 7 – UNITED STATES, SPRING 2010

5. (2.75 points)

a. (0.5 point)

Define the terms “technical insolvency” and “bankruptcy” for an insurance company.

b. (0.5 point)

Provide one example of when an insurer would be considered insolvent but not technically insolvent or bankrupt.

c. (0.75 point)

Identify three categories of regulatory activities directed toward maintaining insurer solvency.

d. (1 point)

Describe two common reasons for insurer insolvency.

EXAM 7 – UNITED STATES, SPRING 2010

6. (2 points)

a. (0.5 point)

Briefly describe two arguments in support of insurance rate regulation when the purchase of insurance is compulsory.

b. (0.5 point)

For each argument provided in part a. above, briefly describe one counter-argument.

c. (1 point)

For each rate regulatory item below, briefly describe two possible adverse effects:

i. Binding rate floors

ii. Restrictions on classification

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

7. (2.25 points)

An insurance company has submitted a filing to State A to include credit scoring as a rating variable in its classification plan for personal auto.

a. (1.75 points)

Fully describe how the use of credit scoring as a rating variable could lead to an increase in economic efficiency.

Include and refer to a detailed graph as part of the description.

Assume consumers have perfect information and it is possible to drive without insurance.

b. (0.5 point)

Briefly describe two reasons why State A may disapprove of using this rating variable.

EXAM 7 – UNITED STATES, SPRING 2010

8. (1.25 points)

a. (0.75 point)

Briefly describe three findings from the 1959 U.S. Senate Anti-Trust and Monopoly Subcommittee regarding decisions that helped weaken the influence of bureau rates.

b. (0.5 point)

Identify the system of rate regulation that was ultimately recommended by the subcommittee and briefly describe the rationale for the recommendation.

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EXAM 7 – UNITED STATES, SPRING 2010

9. (1.25 points)

A Department of Insurance (DOI) can use a “seasoning” criterion whereby only experienced insurers are acceptable candidates for licensing.

a. (0.25 point)

Briefly describe the rationale for applying such a criterion.

b. (0.5 point)

Describe an effect this seasoning requirement may have on a start-up insurer’s operations.

c. (0.5 point)

Briefly describe two criteria that, when not prohibited by law, would allow the DOI to waive a seasoning requirement.

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EXAM 7 – UNITED STATES, SPRING 2010

10. (1.25 points)

The National Association of Insurance Commissioners (NAIC) has implemented an accreditation program for Departments of Insurance (DOIs) to promote uniformity in insurer solvency regulation.

a. (0.75 point)

Identify the three areas of NAIC standards that DOIs must meet to receive accreditation.

b. (0.5 point)

Briefly describe two constraints that DOIs and state governments face in dealing with the NAIC's regulation standards.

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EXAM 7 – UNITED STATES, SPRING 2010

11. (2 points)

Describe four consumer benefits of insurers using property catastrophe modeling.

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EXAM 7 – UNITED STATES, SPRING 2010

12. (2 points)

Initially, the asset risk-based capital (RBC) charges for property/casualty companies were adopted from the asset RBC charges for life insurance companies.

a. (1 point)

Describe two reasons why asset risk is less important for property/casualty companies than for life insurance companies.

b. (1 point)

Describe how the RBC asset charge differentiates among property/casualty companies on the basis of:

- i. diversification in the financial portfolio
- ii. concentration (with respect to number of issuers)

EXAM 7 – UNITED STATES, SPRING 2010

13. (1.25 points)

a. (0.5 point)

Describe the purpose of the excess & surplus lines market.

a. (0.75 point)

Identify three ways the excess & surplus lines market is regulated.

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EXAM 7 – UNITED STATES, SPRING 2010

14. (2.75 points)

a. (0.25 point)

Identify the rate filing approach most states implemented to ensure property and casualty rates and forms remained under their control following the McCarran-Ferguson Act of 1945.

b. (1.5 points)

Identify and briefly describe three approaches to insurance rate regulation, other than the approach identified in part a. above, that state insurance departments may promulgate.

c. (0.5 point)

The Gramm-Leach-Bliley Act of 1999 (GLB) sought to improve the speed by which insurance products receive regulatory approval and reach the market. Describe how most states responded to the passage of GLB with respect to commercial insurance purchased by large insureds.

d. (0.5 point)

Describe whether the response identified in part c. above conflicts with the McCarran-Ferguson Act.

EXAM 7 – UNITED STATES, SPRING 2010

15. (2.5 points)

a. (1.5 points)

When Congress enacted the McCarran-Ferguson Act, states received primary regulatory control over the business of insurance in most respects. Describe three exceptions.

b. (1 point)

The current system provides partial insurer exemption from federal anti-trust laws combined with state regulation of rates. Removal of antitrust protection and open competition in rate setting has been proposed. Describe a potential positive and a potential negative impact of this change on insurance companies.

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EXAM 7 – UNITED STATES, SPRING 2010

16. (3 points)

For the following acts

- The Sherman Antitrust Act (1890)
- The Clayton Antitrust Act (1914)
- The Robinson-Patman Act (1936)

Describe each act and describe the impact of each act on the insurance industry in the time period between the South-Eastern Underwriters Association decision and the passing of the McCarran-Ferguson Act.

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EXAM 7 – UNITED STATES, SPRING 2010

17. (0.75 point)

Briefly describe three reasons why a fully-funded OASDI program is considered unnecessary.

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EXAM 7 – UNITED STATES, SPRING 2010

18. (2.5 points)

a. (0.5 point)

Briefly describe two objectives of government involvement in insurance.

b. (1 point)

For each objective given in part a. above, identify a governmental insurance program and briefly describe how the government's involvement meets that objective.

c. (1 point)

For each program identified in part b. above, evaluate the effectiveness of the government program.

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EXAM 7 – UNITED STATES, SPRING 2010

19. (4.25 points)

In 2008, State X has a stable population of 25,000 drivers and two monoline Personal Automobile insurance companies comprised as follows:

	Company A	Company B
Drivers	10,000	15,000
Expected Annual Losses per Driver	\$300	\$600
Annual Premium per Driver	\$400	\$800

On January 1, 2009, 2,000 high-risk drivers moved into State X. These drivers had an expected average loss of \$2,000/year. Since neither Company A nor Company B would accept these drivers, State X decided to establish an Assigned Risk Plan effective January 1, 2009. The annual premium per assigned risk driver was set at \$1,000, and the drivers were assigned to companies in proportion to annual voluntary written premiums.

Dissatisfied with the performance of the Assigned Risk Plan, State X decided to switch to a Reinsurance Facility mechanism starting January 1, 2010. Profits or losses of the reinsurance facility in 2010 are to be allocated to companies in proportion to annual voluntary written premiums collected in 2009. To encourage participation of insurance companies, a simultaneous rate increase effective on January 1, 2010 was approved for both Companies A and B (so that the Company B annual premium per driver is still twice as high as the Company A annual premium per driver). In exchange, Companies A and B agreed that no high-risk driver will be refused coverage by both of them.

Assume no interest, loss adjustment expenses, other underwriting expenses, or taxes, and that companies must charge identical rates for every driver insured by the company.

a. (0.25 point)

Calculate profit (or loss) for Company A in 2008.

b. (1.25 points)

Calculate profit (or loss) for Company A in 2009.

c. (1.25 points)

Under the proposed reinsurance facility mechanism, explain a strategy (in terms of accepting high-risk drivers as policyholders) Companies A and B could employ in order to minimize their losses and explain the reasons for that strategy. Assume that all low- and medium-risk drivers would be retained by their respective companies.

d. (1.5 points)

Under the strategy from part c. above, calculate the revised annual premium per driver that needs to be charged by Company A so that in 2010 it can achieve the same profit (or loss) as it achieved in 2008.

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EXAM 7 – UNITED STATES, SPRING 2010

20. (3 points)

a. (0.5 point)

Briefly describe two reasons why private insurance companies have largely been unwilling to underwrite flood insurance.

b. (1 point)

Identify and briefly describe two legal theories that have been used in attempts to circumvent the flood exclusion of a homeowners policy.

c. (0.5 point)

Briefly describe two allegations regarding the flood exclusion that were filed in the 2005 Attorney General lawsuit "*The State of Mississippi versus Mississippi Farm Bureau Insurance et al.*"

d. (0.5 point)

Discuss the impact on homeowners insurance rates if the flood exclusion is voided.

e. (0.5 point)

Discuss the impact on the National Flood Insurance Program if the flood exclusion is voided.

EXAM 7 – UNITED STATES, SPRING 2010

21. (1.25 points)

a. (0.5 point)

Briefly describe two benefits guaranty funds may provide to affected insureds.

b. (0.75 point)

For lines of business covered by guaranty funds, briefly describe three ways in which the protection offered by guaranty funds is not as broad as the protection offered by the original insurance policy.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

22. (3.25 points)

Given the following for Company XYZ (all figures in thousands of dollars):

	Reinsurer A (authorized)	Reinsurer B (authorized)	Reinsurer C (unauthorized)
Reinsurance Recoverables	500	250	100
Letters of Credit	100	100	10
Recoverables on Paid Loss and LAE over 90 days due, not in dispute	100	50	50
Recoverables on Paid Loss and LAE over 120 days due, not in dispute, included in preceding line	50	50	0
Recoverables on Paid Loss and LAE, total	300	200	75
Amounts in dispute, included in preceding line	75	10	25
Amounts company received in last 90 days of statement year	50	75	15

a. (3 points)

Calculate the total provision for reinsurance for Company XYZ.

b. (0.25 point)

If a residual market pool is slow-paying, briefly describe why no provision for reinsurance is calculated for this residual market pool.

EXAM 7 – UNITED STATES, SPRING 2010

23. (2 points)

A personal lines auto insurance company, Company A, has a \$50 million provision for reinsurance. Company A estimates its uncollectible reinsurance at \$15 million.

a. (0.25 point)

Identify a place on its Statutory Annual Statement where Company A would report its \$50 million provision for reinsurance. If this amount would not be reported in the Statutory Annual Statement, state “none.”

b. (0.25 point)

Identify a place on its Statutory Annual Statement where Company A would report its \$15 million uncollectible reinsurance. If this amount would not be reported in the Statutory Annual Statement, state “none.”

c. (0.5 point)

Briefly describe two actions Company A might take to reduce its provision for reinsurance.

d. (0.5 point)

Briefly describe one negative consequence Company A might experience resulting from each action in part c. above.

e. (0.5 point)

Briefly describe one argument in favor of, and one argument against, reporting both the provision for reinsurance and the uncollectible reinsurance in the Statutory Annual Statement.

EXAM 7 – UNITED STATES, SPRING 2010

24. (3 points)

Given the following information provided for Company ABC:

- Policyholders’ Surplus, Prior Year = \$1,100,000
- Policyholders’ Surplus, Second Prior Year = \$900,000

Schedule P - Part 2 - Summary

Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year End (\$000 Omitted)						Development	
	2005	2006	2007	2008	2009	One Year	Two Year
2006	XXX	290	311	298	304	6	(7)
2007	XXX	XXX	391	395	423	28	32
2008	XXX	XXX	XXX	428	448	20	XXX
2009	XXX	XXX	XXX	XXX	494	XXX	XXX
Totals						54	25

Schedule P - Part 3 - Summary

Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year End (\$000 Omitted)					
	2005	2006	2007	2008	2009
2006	XXX	10	30	52	70
2007	XXX	XXX	20	45	70
2008	XXX	XXX	XXX	18	37
2009	XXX	XXX	XXX	XXX	21

Schedule P - Part 4 - Summary

Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End (\$000 Omitted)					
	2005	2006	2007	2008	2009
2006	XXX	200	186	171	166
2007	XXX	XXX	265	235	222
2008	XXX	XXX	XXX	293	282
2009	XXX	XXX	XXX	XXX	338

**Schedule P - Part 5
Section 1**

Cumulative Number of Claims Closed with Loss Payment Direct and Assumed at Year End					
	2005	2006	2007	2008	2009
2006	XXX	113	130	142	150
2007	XXX	XXX	122	133	145
2008	XXX	XXX	XXX	125	140
2009	XXX	XXX	XXX	XXX	141

**Schedule P - Part 5
Section 2**

Number of Claims Outstanding Direct and Assumed at Year End					
	2005	2006	2007	2008	2009
2006	XXX	32	22	15	9
2007	XXX	XXX	35	28	25
2008	XXX	XXX	XXX	45	40
2009	XXX	XXX	XXX	XXX	55

**Schedule P - Part 5
Section 3**

Cumulative Number of Claims Reported Direct and Assumed at Year End					
	2005	2006	2007	2008	2009
2006	XXX	347	372	392	399
2007	XXX	XXX	364	386	415
2008	XXX	XXX	XXX	381	412
2009	XXX	XXX	XXX	XXX	417

<< QUESTION 24 CONTINUED ON NEXT PAGE >>

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EXAM 7 – UNITED STATES, SPRING 2010

24. (continued)

a. (0.5 point)

Calculate the Outstanding Case Loss and Defense and Cost Containment Expense Reserve as of December 31, 2009 for Accident Year 2008.

b. (0.5 point)

Calculate the Net Case Incurred Loss and Defense and Cost Containment Expense as of December 31, 2008 for Accident Year 2007.

c. (0.5 point)

Calculate the Average Net Paid Loss and Defense and Cost Containment Expense Severity per Claim Closed With Payment as of December 31, 2007 for Accident Year 2007.

d. (0.5 point)

Calculate the NAIC IRIS Ratio 11: One-Year Reserve Development to Policyholders' Surplus.

e. (0.5 point)

Calculate the NAIC IRIS Ratio 12: Two-Year Reserve Development to Policyholders' Surplus.

f. (0.5 point)

Company ABC has decided to amend its 2009 Annual Statement to include \$200,000 in unanticipated attorney fees for declaratory judgments regarding the incidence of prior year pollution claim liability. Explain the impact this has on IRIS Ratios 11 and 12.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

25. (4.25 points)

The following data are for an insurance company. All figures in the table are in thousands of dollars and valued as of the applicable year end.

	Homeowners		All Lines	
	2008	2009	2008	2009
Written Premium	1,200	1,300	6,200	6,800
Earned Premium	1,150	1,250	5,800	6,600
Loss and loss adjustment expense reserves	480	520	3,200	3,450
Unearned premium reserves	650	700	2,500	2,650
Net agents' balances	240	260	1,100	1,150
Commissions and brokerage incurred	150	160	800	850
Taxes, licenses, and fees incurred	35	40	150	170
Other acquisition expenses incurred	180	195	520	590
General expenses incurred	48	52	150	160
Net Investment Income Earned			520	580
Net Realized Capital Gains			160	132
Net Unrealized Capital Gains			250	320
Surplus			4,050	4,200

- Mean surplus allocated to homeowners for 2009 = \$800,250
- Investment Gain Ratio for 2009 = 8%

a. (1.75 points)

Calculate the investment gain on funds attributable to insurance transactions for Homeowners.

b. (1.25 points)

Calculate the investment gain on funds attributable to capital and surplus for homeowners.

c. (0.5 point)

Explain why there is no allocation of investment income to lines of business on Part III of the Insurance Expense Exhibit (IEE).

d. (0.75 point)

Discuss the appropriate use of the IEE as a measure of profitability.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

26. (4.5 points)

The following data are from the 2009 Statutory Annual Statement for an insurance company. All figures are in thousands of dollars.

	Net Investment Income	
	Collected During Year	Earned During Year
U.S. Government Bonds	340	350
Bonds exempt from U.S. tax	5,200	5,600
Preferred Stocks (unaffiliated)	855	865
Cash, cash equivalents and short term investments	4	5
Other invested assets	120	122

Federal and foreign income taxes incurred	1,300
Investment expense	200
Depreciation on real estate and other invested assets	5
Premiums earned	225,000
Finance and service charges not included in premium	725
Net premiums written	227,000
Net losses paid	135,000
Net losses unpaid current year	85,500
Net losses unpaid prior year	82,500
Loss expenses incurred	22,300
Other underwriting expenses incurred	63,800
Dividends to stockholders	200
Dividends to policyholders	100
Net realized capital gains or (losses)	(3,600)
Net gain or (loss) from agents' or premium balances charged off	(200)

a. (1.5 points)

Calculate the net underwriting gain or (loss) that will appear on the Statement of Income page of the company's 2009 Statutory Annual Statement.

b. (1.5 points)

Calculate the net investment gain or (loss) that will appear on the Statement of Income page of the company's 2009 Statutory Annual Statement.

c. (1.5 points)

Calculate the net income that will appear on the Statement of Income page of the company's 2009 Statutory Annual Statement.

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EXAM 7 – UNITED STATES, SPRING 2010

27. (3 points)

A workers compensation insurer sells a large dollar deductible policy with a deductible of \$750,000 on January 1, 2009. A covered worker suffers an injury on July 1, 2009. The benefits are \$1,500 a week and are expected to last one year. The insurer pays the benefits through the end of the year and plans to bill the employer each July 1 for the policy year's reimbursement. As of December 31, 2009 the employer has not yet paid any reimbursement to the insurer.

a. (1 point)

Quantify the impact this claim has on both the insurer's 2009 statutory net income and the insurer's December 31, 2009 surplus as regards policyholders.

b. (0.75 point)

Briefly describe the credit risk imposed by large dollar deductibles on the insurer, the employer, and the injured worker.

c. (0.75 point)

For each of the parties in part b. above, briefly describe a requirement that reduces the credit risk.

d. (0.5 point)

Describe the disclosure(s) that should be included in the Notes to the Financial Statement regarding this policy.

EXAM 7 – UNITED STATES, SPRING 2010

28. (1.75 points)

Given the following information for an insurance company from its Statutory Annual Statement for the referenced year (all figures in thousands of dollars):

	2008	2009
Policyholder Surplus	100,000	?
Federal Income Tax Incurred	700	750
Dividends to Stockholders	3,250	3,500
Dividends to Policyholders	1,000	1,500
Net Investment Income Earned	15,000	20,000
Non-Admitted Assets	4,500	6,000
Provision for Reinsurance	9,000	9,500
Net Realized Capital Gains (Losses)	2,000	(2,500)
Net Unrealized Capital Gains	500	4,000
Statutory Net Income		17,750

Calculate the policyholder surplus for year-end 2009.

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EXAM 7 – UNITED STATES, SPRING 2010

29. (4 points)

The following information is from an insurance company’s Statutory Annual Statement for 2009. All figures are in thousands of dollars.

<u>Schedule D</u>	<u>Actual Cost</u>	<u>Fair Value</u>	<u>Par Value</u>	<u>Book/Adjusted Carrying Value</u>
Long-Term Bonds - Totals	15,260	14,956	15,124	15,060
Common Stocks - Totals	30,006	28,085	N/A	28,085

Losses Unpaid

<u>Schedule P</u>	<u>Case Basis</u>		<u>Bulk & IBNR</u>	
	<u>Direct & Assumed</u>	<u>Ceded</u>	<u>Direct & Assumed</u>	<u>Ceded</u>
Totals	6,170	2,340	3,858	2,305

Defense and Cost Containment Unpaid

<u>Schedule P</u>	<u>Case Basis</u>		<u>Bulk & IBNR</u>	
	<u>Direct & Assumed</u>	<u>Ceded</u>	<u>Direct & Assumed</u>	<u>Ceded</u>
Totals	0	0	319	150

Adjusting & Other Expenses Unpaid

<u>Schedule P</u>	<u>Direct & Assumed</u>	<u>Ceded</u>
Totals	758	329

Balance Sheet Items: All asset amounts below are shown on an admitted basis.

Cash	2,545
Other Invested Assets	75
Investment Income Due and Accrued	125
Amounts Recoverable from Reinsurers	2,500
Funds held by or deposited with reinsured companies	3,500
Net deferred tax asset	750
Reinsurance Payable on paid losses and LAE	1,270
Other Expenses	285
Ceded Reinsurance Premiums Payable (net ceding commissions)	1,280
Provision for Reinsurance	50
Common Capital Stock	3,000
Gross Paid in and contributed Surplus	10,250

a. (2 points)

Calculate the company’s net admitted assets for year-end 2009.

b. (2 points)

Calculate the company’s liabilities for year-end 2009.

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EXAM 7 – UNITED STATES, SPRING 2010

30. (4 points)

Given the following information for an insurance company that writes only primary general liability (GL) and workers compensation (WC) insurance:

	<u>GL</u>	<u>WC</u>
Industry average development factor	1.075	1.030
Company average development factor	1.150	1.015
Industry loss and LAE worst case year	0.285	0.273
Company loss and LAE worst case year	0.262	0.258
Implicit interest margin	0.921	0.872
Unpaid losses	\$15,000,000	\$6,000,000

- 40% of the workers compensation reserves are from retrospectively-rated plans.

Calculate the Risk-Based Capital (RBC) Reserve Risk Charge.

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EXAM 7 – UNITED STATES, SPRING 2010

31. (4.75 points)

Given the following information about an insurance company (all figures in thousands of dollars):

	2008	2009
Direct Written Premium		1,000
Assumed Written Premium		800
Total Ceded Written Premium		700
Total Ceded Reinsurance Unearned Premium		285
Total Reinsurance Ceded Commissions		150
Net Written Premium	850	
Policyholder Surplus	300	400
Loss and Loss Expense Incurred	700	650
Underwriting Expense	250	375
Other Income	125	75
Policyholder Dividends	0	0

- Total 2008 and 2009 Earned Premium = 1,500
- Total 2008 and 2009 Investment Income = 100

a. (0.5 point)

Briefly describe two reasons why IRIS Ratio #4 – Surplus Aid to Surplus is of primary importance in the analysis of a company's financial health.

b. (0.5 point)

Identify two IRIS ratios that should be adjusted when IRIS Ratio #4 – Surplus Aid to Surplus is greater than 15%.

c. (0.25 point)

Calculate IRIS Ratio #4 – Surplus Aid to Surplus.

d. (1.5 points)

Identify and calculate three other IRIS ratios available from the data above.

e. (2 points)

For each of the IRIS ratios calculated in both parts c. and d. above, relate the value calculated to the financial health of the insurer.

EXAM 7 – UNITED STATES, SPRING 2010

32. (2.5 points)

Given the following information for ABC Insurer (all figures in thousands of dollars):

	<u>Amount</u>
GAAP Equity	1,500
Uncollected premiums < 90 days past due	76
Uncollected premiums > 90 days past due	34
Reinsurance recoverables on paid loss & LAE	45

	<u>Depreciated Cost</u>	<u>Market Value</u>
Real Estate (held with the intent to sell)	70	90

BONDS	<u>Amortized Cost</u>	<u>Market Value</u>
Held-to-maturity (in good standing)	50	55
Held-to-maturity (not in good standing)	190	80
Available for sale (in good standing)	20	31
Held in trading portfolios (not in good standing)	89	60

And the following information related to ABC's recent acquisition of XYZ Insurer (all figures in thousands of dollars):

	<u>Amount</u>
Purchase price of XYZ Insurer	200
Statutory Surplus of XYZ Insurer	180
Fair value of XYZ Insurer's acquired assets	795
Fair value of XYZ Insurer's acquired liabilities	610

Calculate ABC Insurer's Policyholders' Surplus.

EXAM 7 – UNITED STATES, SPRING 2010

33. (2.5 points)

For each of the following items, contrast its treatment within the specified accounting frameworks. If there is no difference in treatment between the specified accounting frameworks, simply write, "No difference."

a. (0.5 point)

Gross loss & LAE reserves (GAAP vs. Fair value)

b. (0.5 point)

Ceded loss & LAE reserves from prospective reinsurance (GAAP vs. SAP)

c. (0.5 point)

Ceded loss & LAE reserves from retroactive reinsurance (GAAP vs. SAP)

d. (0.5 point)

Unearned premium reserve (SAP vs. Fair value)

e. (0.5 point)

Deferred policy acquisition costs (SAP vs. Fair value)

EXAM 7 – UNITED STATES, SPRING 2010

34. (3 points)

ABC Insurance Company (ABC) is recording \$1.5 billion in net loss and LAE reserves on page 3 of its 2008 Statutory Annual Statement. Of this amount, \$793 million represents the provision for ABC's continuing book of traditional property/casualty lines of business. ABC's Appointed Actuary has performed a comprehensive quantitative analysis of net unpaid claims for the continuing book and concluded that \$793 million is reasonable. The remaining \$707 million consists of the following:

1. \$7 million in direct plus assumed loss and LAE reserves for a small book of commercial auto business in run-off. ABC's Appointed Actuary has decided not to perform any quantitative analysis on this balance given that it is immaterial to total recorded reserves.
2. \$200 million in loss and LAE reserves for Asbestos and Environmental (A&E) reserves. ABC's Appointed Actuary has reviewed a quantitative analysis on the reserves for this book that was performed by another qualified actuary and concluded that the other actuary's analysis for A&E produces reasonable results. The Appointed Actuary has therefore decided not to perform an independent quantitative analysis on A&E.
3. \$300 million in net loss and LAE reserves for the company's participation in an involuntary pool back in the 1980s for which there is insufficient information to perform an actuarial review.
4. \$200 million in net loss and LAE reserves for the company's participation in a voluntary pool back in the 1980s for which another actuary has issued a reasonable opinion. The Appointed Actuary relies on the opinion of the pool actuary without any review.

For each of the four items above:

a. (1 point)

State whether the Appointed Actuary is required to disclose that he did not perform an independent analysis in the Statement of Actuarial Opinion.

b. (2 points)

Discuss whether the Statement of Actuarial Opinion will be qualified to exclude this portion of the business.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

35. (4.25 points)

DEF Insurance Company's recorded loss and loss adjustment expense (LAE) reserves stem from a continuing book of commercial lines, including general liability (CGL), fire, and multi-peril (CMP), and a discontinued book of Asbestos and Environmental (A&E) exposures emanating from CGL policies written in 1980 and prior.

In forming the 2008 Statement of Actuarial Opinion for DEF Insurance Company (DEF), the Appointed Actuary has performed unpaid claim projections for each of the continuing lines of business using paid and case incurred loss and defense and cost containment (DCC) expenses, gross of anticipated salvage and subrogation (S&S), using the traditional loss and DCC development factor (LDF) method and the Bornhuetter-Ferguson (BF) method. The initial expected ultimate estimate used by the actuary in the BF method was based on an analysis of loss and DCC ratios. Separate projections were made of anticipated S&S recoveries.

For the discontinued lines, the Appointed Actuary has used industry benchmark methods that rely on calendar year payments and ending case reserves.

Unpaid adjusting and other (A&O) expenses were estimated based on historical ratios of calendar year A&O payments to loss payments for all lines combined.

a. (0.75 point)

Identify three items that the SCOPE paragraph within the Statement of Actuarial Opinion should include with respect to the data used by the Appointed Actuary in forming the opinion for DEF.

b. (1 point)

For the continuing lines, identify each of the specific items that should be reconciled to DEF's Statutory Annual Statement.

c. (0.5 point)

For the discontinued lines, identify each of the specific items that should be reconciled to DEF's Statutory Annual Statement.

d. (0.5 point)

Identify any other data items required to be reconciled to DEF's Statutory Annual Statement. If none, write "none."

e. (1.5 points)

With respect to the Data Testing Requirement implemented in the 2004 P/C Annual Statement Instructions, describe the roles of the insurance company, the Appointed Actuary, and the auditor.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

36. (4.75 points)

XYZ Insurance Company is a stand-alone property/casualty insurance company that does not discount its reserves. For purposes of determining whether a significant risk of material adverse deviation exists in XYZ's recorded net loss and LAE reserves as of December 31, 2009, XYZ's Appointed Actuary has decided to select a materiality standard based on the smallest of the following amounts:

1. 12% of XYZ's net recorded loss and LAE reserves;
2. 20% of XYZ's statutory surplus; and
3. the amount of adverse reserve development that would trigger a change in XYZ's current Risk Based Capital (RBC) regulatory action level.

Given the following information (all figures in millions of dollars):

Appointed Actuary's Range of Unpaid Loss & LAE Claims, Net of Reinsurance	Low	Central	High
	50	60	70

XYZ Net Recorded Loss & LAE Reserves:	61
XYZ Statutory Surplus	150
XYZ Risk Based Capital	32

a. (1.25 points)

State the four NAIC RBC action levels and the range of RBC ratios within each level. In your answer, identify the denominator in the RBC ratio.

b. (0.75 point)

Identify XYZ's current RBC Action Level.

c. (1 point)

Compute the Appointed Actuary's materiality standard.

d. (1 point)

Fully explain whether or not a risk of material adverse deviation exists for XYZ Insurance Company.

e. (0.75 point)

Explain the action that the insurance commissioner of XYZ's domiciliary state would be required to take and the action that XYZ would be required to take if XYZ were to drop to the next RBC action level.

CONTINUED ON NEXT PAGE

EXAM 7 – UNITED STATES, SPRING 2010

37. (4.75 points)

Given the following information related to an insurance company's financial results for 2009 (figures other than "Average Reserve Discount Factor" in millions of dollars):

Statutory Underwriting Income (Loss)	(30)
Taxable Bond Coupon Income	50
Dividend Received from Unaffiliated Entities	5
Realized Capital Gains	7
Unrealized Capital Gains	10
Unearned Premium Reserves (Beginning of the year)	100
Unearned Premium Reserves (End of the year)	125
Loss and LAE Reserves (Beginning of the year)	450
Loss and LAE Reserves (End of the year)	425
Average Reserve Discount Factor (Beginning of the year)	0.95
Regular Taxable Income	50
Alternative Minimum Taxable Income	96

a. (0.75 point)

Calculate the Minimum Tax Credit.

b. (2 points)

Calculate the tax-exempt Bond Coupon Income and Average Reserve Discount Factor at the end of the year.

c. (2 points)

Assume that in the next year:

- 20% of the bond investments will mature at the beginning of the year.
- The company will invest \$500 million at the beginning of the year in some combination of taxable bonds with a 6% average book yield and tax-exempt bonds with a 4% average book yield.
- The company expects no change to its statutory underwriting income, and there is no change to the Unearned Premium Reserves, Loss Reserve Discount, or any other income.

Calculate the investment in tax-exempt bonds that would maximize the company's after-tax net income.

END OF EXAMINATION

Exam 7 - United States Annual Statement, Taxation and Regulation

4-May-10

POINT VALUE OF QUESTIONS

QUESTION	VALUE OF QUESTION	SUB-PART OF QUESTION					
		(a)	(b)	(c)	(d)	(e)	(f)
1	2.50	2.00	0.50				
2	1.75	1.00	0.25	0.50			
3	1.50	0.50	0.50	0.50			
4	2.00	0.50	0.50	1.00			
5	2.75	0.50	0.50	0.75	1.00		
6	2.00	0.50	0.50	1.00			
7	2.25	1.75	0.50				
8	1.25	0.75	0.50				
9	1.25	0.25	0.50	0.50			
10	1.25	0.75	0.50				
11	2.00	2.00					
12	2.00	1.00	1.00				
13	1.25	0.50	0.75				
14	2.75	0.25	1.50	0.50	0.50		
15	2.50	1.50	1.00				
16	3.00	3.00					
17	0.75	0.75					
18	2.50	0.50	1.00	1.00			
19	4.25	0.25	1.25	1.25	1.50		
20	3.00	0.50	1.00	0.50	0.50	0.50	
21	1.25	0.50	0.75				
22	3.25	3.00	0.25				
23	2.00	0.25	0.25	0.50	0.50	0.50	
24	3.00	0.50	0.50	0.50	0.50	0.50	0.50
25	4.25	1.75	1.25	0.50	0.75		
26	4.50	1.50	1.50	1.50			
27	3.00	1.00	0.75	0.75	0.50		
28	1.75	1.75					
29	4.00	2.00	2.00				
30	4.00	4.00					
31	4.75	0.50	0.50	0.25	1.50	2.00	
32	2.50	2.50					
33	2.50	0.50	0.50	0.50	0.50	0.50	
34	3.00	1.00	2.00				
35	4.25	0.75	1.00	0.50	0.50	1.50	
36	4.75	1.25	0.75	1.00	1.00	0.75	
37	4.75	0.75	2.00	2.00			

TOTAL 100.00

EXAM 7US

Question 1

- A. 1. In an auto accident the defendant may use contributory negligence as a defense but if in spite of the victim's negligence the injurer had one last clear chance to avoid injury and did not then the driver (injurer) is negligent and liable for damages.
2. If a passenger voluntarily gets in a car with a drunk driver, knowing that the driver is inebriated and driver has given passenger significant warning if accident occurs and passenger is injured and sues driver. Driver defense could be passenger's assumption of risk and not be liable for passenger's injuries.
3. & 4. Driver A is texting while driving and not paying attention to the road. Driver B goes through red light and hits Driver A. The court decides that Driver A is 25% at fault and Driver B is 75% at fault.

Pure comparative system – Driver will be responsible for 25% of Driver B's damages and Driver B will be responsible for 75% of Driver A's damages.

Mixed comparative system – Driver A is not responsible for any of Driver B's damages since his fault is not over 50%. Driver B is still responsible for 75% of Driver A's damages.

- B. Assumption of Risk:
- 1) Did the person know she was assuming the risk?
 - 2) Did the person voluntarily assume the risk? In other words, did the other party have tremendous bargaining power over the person?

Alt B.

- whether or not the hazard was obvious and evident to a reasonable person
- whether or not there was a warning at the hazard and/or there to avoid
- whether there was an exculpatory clause. If there was one, this would relieve the defendant of liability
- relative sophistication and bargaining power of parties

Question 2

- A. 1. Individual has no right to sue. Pay without regard to fault, no sue
2. Modified can sue, but limited. Must meet
- Verbal threshold - > than described medical damage (words)
- Monetary threshold - >than \$ amount
3. Add on Plan – no limit of right to sue but collects no fault benefits
4. Choice no fault – individual will decide at policy inception if wants to be covered under no fault.
- B. Add on Plan – injured party receives benefits regardless of fault similar to a WC system
- C. No fault means injured insurer pays regardless of fault to party but can subrogate from liable parties insurer.

Alt A

1. No right to sue
2. Limited right to sue; injury must exceed a threshold
3. No limits on right to sue
4. Limited right to sue in return for premium reduction

- Alt A**
1. Not able to sue
 2. Depends on the threshold requirements, if above they can sue
 3. Able to sue
 4. Depends on what type of plan they purchase
- Alt B**
- Payments for medical costs.
 - Benefits include medical bills, costs of BI, PIP-type coverage paid speedily and without regard to fault.
- Alt C**
- In a majority of no-fault states the insurer can subrogate against the at-fault party's insurer to no-fault damages paid.
- Alt B**
- Benefits for economic loss like medical expense, lost wages or related service expenses no payment for non economic loss like pain and suffering.
- Alt B**
- Compensatory damages for injury suffered but no punitive damages
- Alt C**
- In most no-fault states, medical insurance of injured party is primary – insurer can subrogate from that primary.
 - Insurer has right to subrogate against liable 3rd party in most no-fault states.
 - they usually can subrogate from at-fault party.

Question 3

- A.
1. Newly sued companies will incur significant discovery costs in trying to figure out their exposure – will increase defense cost.
 2. More coverage disputes between insurers and insureds will increase defense costs.
- B.
1. If the trust fund runs out of money, who will have to pay? (insurers)
 2. What will the requirements be in order to be part by plan? How severe will medical costs/injuries need to be?

Additional Answers

- A.
1. In the mid to late 90's there was a substantial growth in the number of claims filed. This would result in more litigation costs.
 2. Increased costs to defend against fraudulent claims. Many claimants claimed to suffer from both asbestos related disease and silicosis. Very unlikely a person suffers from both.
- B.
1. Most claims come from unimpaired claimants. Scarce resources should be allocated more to impaired ones.
 2. Ease of filing a claim results in more fraudulent claims
- C.
1. More focus on allocating scarce resource towards impaired claimants
 2. More scrutiny on claims to see if they are fraudulent
- A.
1. The majority of the cases are by plaintiffs with non-malignant cases, and these people remain unimpaired.
 2. Mass tort cases are ceasing and single plaintiff cases are increasing.
- A.
1. Abandonment of settlement strategies
 2. New defendants, leading to increased discovery costs.
- A.
- Heightened scrutiny of potentially fraudulent claims – remove fraud lowers cost.
- A.
1. Extent to which settlement strategies are pursued (lately fewer settlement strategies fewer defense costs)
- A.
- Extent to which there is a dispute b/w company and insurer with respect to liability (if insurer denies coverage, fewer defense costs, but settling dispute drives up costs)
- B.
1. Can the trust fund be operated efficiently? Do they award enough?
 1. If there are medical criteria for award – are they accurate?
 2. Is sharing mechanism of awards equitable and fair among insurers?
- C.
1. Handling most serious claims first
 2. Putting caps on pain and suffering awards

- B. 1. Insurers may be worried that they will end up paying more than they would have if the fund were not in place, say if they did not believe they were at fault or had loss exposure then indicated by their share of the plan both insurers and the public may be covered about possibility of more fraudulent claims being made.
- C. –Court ruling that determined policies written after installation of asbestos are subject to the aggregate limits defined by the policy.
Court ruling that reserved the right of individuals not currently showing symptoms to sue in the future (lengthened the statute of limitations).
- B Insurers would the medical standards be high enough to weed out fraudulent claims.
-Would the funds be sufficient? If not, cases may end up back in courts.
- C. 1. Legislation that restricts the venue (i.e. state) in which claimant can bring trial is in connection with where injury likely occurred.
2. Must meet medical criteria in order to bring case to trial.
-Inactive dockets – delays hearing a case until or if symptoms appear for currently unimpaired claimants
-Liability for “innocent sellers”
-Judge Jack found that screening process needs to be more involved to prevent repeat claimants.
More towards paying out claims to those most adversely affected (health) by asbestos exposure.
-Limits on successor liability.

Question 4

- A. Litigation can be expensive due to fact-finding necessary to establish negligence. If an injurer provides optimal care they will be found not liable. By providing optimal care the injurer can avoid law suits since a victim will not want to incur litigation expense if they will not recover damages.

Alt A.

- A. Injurer will not choose optimal care level; because injurer realizes the litigation costs will prevent certain victims from filing claims. Consequently injurer does not internalize the victims costs.

Alt A.

- A. In the unilateral care model, we only look at injurer levels of precaution and costs of care (not those of the victim).
 - 1. Due to litigation costs, some injured victims will not file suit.
 - 2. Injurers will take this fact into consideration in choosing their optimal care levels. This will therefore adjust the care level.
- B. Decreases incentives to provide optimal care because some claimants won't bring their suits to court because they cannot afford the litigation costs.
- C. Under a negligence system legal errors in assigning liability have an impact on the injured's optimal care level but does not have any effect on a strict liability system. Under a strict liability system legal errors in assigning the amount of damages has an impact on injurer care level but does not impact injurer's care level in a negligence system.

Alt C. Legal errors in determining the reasonable care standard (x^*) may lead to inefficient care choice under negligence but doesn't affect strict liability system. Under negligence defendant may have chosen x -level of care and courts determine $x^* > x$ as reasonable standard leaving defendant negligent. No such risk under strict liability.

Alt C

- Wrong due care from legal errors will affect optimal care in negligence since they have to reach due care to avoid liability. No affect for strict liability.
- Wrong $p(x)D(x)$ affect the strict liability which need to minimize $(x + p(x)D(x))$ but no affect negligence.

Alt C

- Legal errors create measurement uncertainty when determining optimal level of care (threshold for negligence) which creates an efficiency loss.
- Because strict liability eliminates the need to determine this optimal care level, there is no efficiency loss from legal errors.

Question 5

- A. Bankruptcy = occurs when liabilities exceed assets.
Technical insolvency = inability to pay bills when due
- B. Assets may still exceed liabilities, but the insurer's capital may fall below minimum standards
- C. Monitor solvency through IRIS and financial examinations
Monitor capital through RBC
Maintaining uniform reporting requirements
- D. Rapid Growth – insurer may over extend its surplus by writing too much business for its surplus and capital to handle when claims are due.
Reserve estimation error – if reserves are not estimated properly the insurer may feel they are in a better position than they actually are. With adverse development, insurers may not be holding enough surplus to pay claims when done

Additional Answers

- A. Technical insolvency: Cannot pay the bill when due.
Bankruptcy: Liability > asset
- B. When it has capital below the minimum capital requirements (did not meet RBC requirements) but still pay the bill and assets > liabilities
- C. 1. Maintain uniform financial reporting system(Annual Statement requirement).
2. Monitoring solvency (financial examination)
3. DOI accreditation (a law provision requiring commissioner has authority to exam insurers)
- D. 1. Rapid growth – did not realize the business risk (less knowledge of loss exposure) SAS require acquisition expensed immediately without DAC assets
2. Inadequate pricing, reservings cannot charge adequate rate for loss exposure. Loss developed adversely.
Surplus will be reduced.
-An insurer may have lax control of Managing General Agent. They could be writing unprofitable, very risky business that could lead to insolvency.
-Fraud may run rampant causing a lot of unanticipated costs, which could lead to insolvency.

- an unanticipated catastrophic storm (e.g. a hurricane) might cause an insurer insuring property lines to be insolvent if rates or reinsurance are insufficient.
- an insurer's poor estimation of unpaid claim liability might cause insolvency as adverse development reduces surplus.
- uncollectible reinsurance – many companies rely heavily on re-insurance, and will become insolvent if it cannot be collected.
- inadequate rates or reserves – if these are not set accurately, insolvency could result.

Question 6

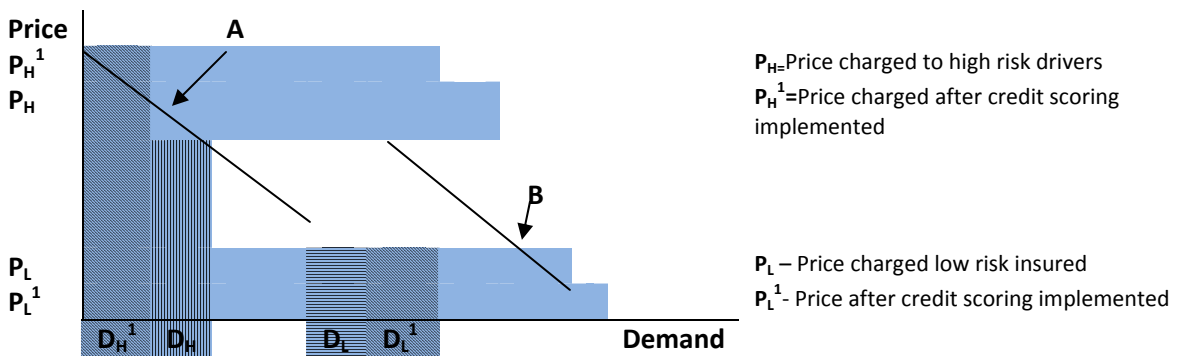
- A. 1. If compulsory insurers will earn excessive profits
 2 If compulsory consumers may inadvertently choose higher priced insurance
- B. 1. Inelastic demand does not lead to excessive profits in competitive market
 2 Rate regulation is a crude way to address this. A better way would be information disclosure.

Additional Answers

- A. -Regulation should be used to prevent excessive profits when purchase of insurance is compulsory.
 -Insurance should be affordable if it is compulsory.
- B. -Inelastic demand does not create excess profits in a competitive market.
 -Regulation is a crude cost to promote subsidy. A better way is to provide direct subsidy.
- A. -Regulation needed to prevent insurers from colluding to increase prices
- B. - market structure doesn't support collusion – significant heterogeneity in pricing and underwriting
- C. -Slow expansion of efficient firms
 - Low hazard risk may choose to go without insurance since cost is higher
 - higher prices in the long run
 -increased exit and decreased entry
 -increase admin cost
 - Reduced diversity of coverage –removes incentive for innovative product design for insurers.

Question 7

A.



- Credit scoring is correlated with auto risk. These credit scores are worse risk, so will be charged higher prices.
- the increase in price for high risk insureds will decrease their demand for insurance
 - the decrease in price for low risk insureds will increase their demand for insurance
 - efficiency is represented by the triangles in the graph

-if the efficiency cost by the high risk drivers (A) is less than the efficiency gained by the low risk drivers (B) this could lead to an increase in economic efficiency overall.

- B. State may claim: 1. Rating variable is unfairly discriminatory
2. Rating variable is against the public interest and will do more harm than good when high risk drivers choose to go without insurance then pay higher risk.

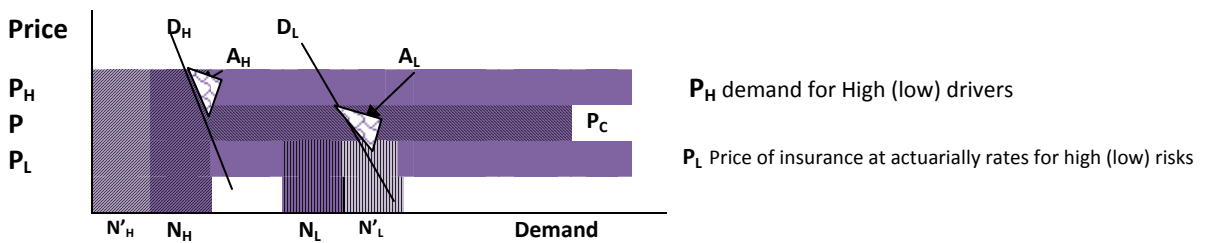
Additional Answers

- A. Since credit score is known to have correlation with the loss cost, the new rates will be more actuarially justified and closer relate to the time risk characteristics of the drivers. More people will be getting their fair rate and efficiency improves.



As long as $X > Y$ benefits number of implementing this credit score variable are greater than the losses because of its implementation – i.e. $(X_H - X_O)$ might go without insurance because it becomes too costly for them.

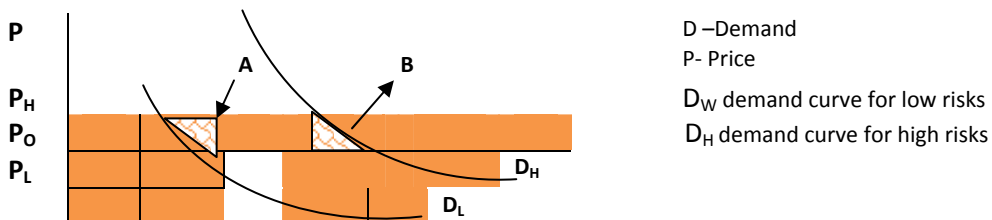
A.



- without classification both high and low risks pay the same price, P_C (N_H high risks, N_L low risks drivers)
- with classification, more low risks will drive once their rates decrease to the actuarially fair rate P_L
- Less high risks will drive once their rates increase to P_H

Efficiency gain = difference b/w the XS of marginal cost over benefit for low risks and XS of many benefit over cost for high risks
 $= A_L - A_H > 0$ (A_L, A_H = shaded areas)

A.



D'_L D^*_L D^*_H D'_H D

Currently price is P_0 , same for both low risks and high risks. Area A is the amount that low risk will have to overpay, B is the benefit gained by high risks. $A > B$.

After credit scoring rule applies we can classify insureds to two groups: high risks if low risks and they will be charged at actuarially adequate rates for both: P_L for low risks, and P_H for high risks. Consequently, the demand for low risks increased from D'_L to D^*_L and the demand for high risks reduced from D'_H to D^*_H .

However the areas of A, B disappear. That mean cross subsidy is eliminated. The average lost of coverage will drop due to more low risks are covered and the price for high risks is now adequate to cover the costs.

Therefore, the economic efficiency is improved.

- B.
- Might create issues with availability and affordability with people with low credit scores
 - It might be considered not directly related to risk – no easy logical explanation why credit score relates to auto accidents.
 - It may result in desperate impact if people with similar credit scores (and therefore treatment) are within the same minority group.
 - It is hard for insurance consumers to accept how credit affects the insurance for driving the casual relationship is not clear to consumers. DOI acts on behalf of consumers by disapproving.
 - Could lead to affordability problems for poor credit drivers.
 - Credit score is not completely within one's control so there may be issues with fairness. For example medical expenses can cause bankruptcy.
 - There is no clear casual relationship between the variable and loss costs
 - It may disproportionately affect poorer groups leading to a lack of affordability and a larger involuntary market or uninsured motorist population.
 - This may cause insurance to be unaffordable to high-risk drivers
 - The state may believe it is fair for all drivers to pay the same rate.
 - Unfairly discriminatory.
 - Confidential information
 - May choose to disapprove since not deemed to be fairly discriminatory. Could adversely affect certain segments for the population (young drivers with less credit history, drivers who have lost their jobs and have excessive debt, etc) not considered to be socially acceptable.
 - May disapprove it because it might encourage high risks to drive uninsured because insurance is no longer affordable.
 - High risk (High Credit) drivers may not buy insurance
 - Credit is not a casual variable, it is only correlated
 - Some feel this variable is not casually related to losses
 - Provides little loss control incentive, (low credit insured pays more regardless of driving habits)

Question 8

- A.
- Competition was insurance's best regulator
 - Rates created in concert was its biggest adversary
 - The following affects were allowed against bureau rates
 - * Could use deductibles not listed by bureau
 - * Could use subclassifications not listed by bureau

*Expenses need not be limited to actual

*Could deviate from loss costs if had experience to support action

- B. File and use – they believed competition was insurance's best regulator and collective rate making was its biggest threat.

Additional Answers

- A. –Insurers can use deductible plans that differ from bureau
-Insurers can base rate deviations on own experience
-Insurers can use expenses other than actual
- B. Encouraged file and use in order to improve competition and reduce costly delays associated with price approval
- A. –Rate deviation from bureau rate.
-Deductible limits different than measure is allowed
-Sub classification from bureau classification allowed
- B. Competition should be the main regulation of rate and urge state to use “file and use” rather than “prior approval”
- A. –Setting rates in concert is a serious threat against competition.
-States should reconsider rejection of file and use system of rate filings
-Competition should be primary source of rate regulation.
- B. The sub-committee recommended file and use so competition could be the primary method of rate regulation.

Question 9

- A. The DOI does not want a newly formed insurer with little to no experience to enter its insurance market and possibly cause disruptions. May make them wait until they have had a few years of experience in another state first.

Additional Answers

- A. Seasoning is used because regulators are afraid that new companies could expand too fast and lead to a greater risk of insolvency because they are not fully aware of each state's domestic market.
- B. This might force a start-up to operate only in one state initially until they build up enough capital and/or experience to be able to expand to other states.
- A. Proven insurers are less likely to become insolvent, and so wish to use this criteria as a judgement of prospective strength.
- B. Increases hurdles for start-up. Must find a state w/o a seasoning criteria to gain experience before applying for licensing in states w/seasoning criteria.
- C. –Adequate surplus with additional surplus requirement may allow unseasoned insurers to gain license
-Financial strength of parent. If a parent company shows adequate strength may allow a unseasoned affiliate/subsidiary to be licensed.

Question 10

- A. –laws and regulations
-Regulatory methods
-Personnel/department procedures
- B. -Difficult to keep current with continuously changing NAIC standards which require regular attention from DOI's and legislatures.
-DOI/state government may not have the resources (funds or manpower) to meet and keep up with standards

Additional Answers

- A. –laws and regulations
 - Regulatory Practices/Procedures
 - Personnel and organizational issues
- B. –They are bound by the unique laws of their state
 - they are bound by funding limitations unique to their state
 - Accreditation requires that the DOIs stay up to date with all of the model laws. Two constraints that make this difficult are:
 - Some states refuse to enact certain law because they will contradict laws currently in place
 - Some states have large agendas and do not have the time to address all of the model Laws.
 - State legislative might accuse NAIC usurping of legislative power.
- A. –Minimum standards of rate and solvency regulation
 - Minimum level of laws in place to regulate insurance
 - DOI personnel must be adequately equipped to regulate insurance, and knowledgeable about insurance.

Question 11

1. Comprehensibility of prices – consumers will better be able to understand how their exposures relate to loss and will act to control these accordingly.
2. Fair pricing – the use of cat models will lessen the need for low risks to pay subsidies for high risk and will reward loss mitigation.
3. Stable pricing –due to the long term data (weather, seismic, etc.) as well as the sheer volume of data the model uses, it will not be susceptible to variation as other methods would be.
4. Reduced Information Risk – investors demand higher returns for unknown risk. Since models will make the risk potential more clear, investor yields will not be as high, which will reduce the prices insureds have to pay.

Additional Answers

1. Comprehensibility – the catastrophe modeling identifies the characteristics related to exposures. By knowing that consumers can better control the losses.
2. Rational behavior – If the price of insurance reflects its long term cost, the consumer would take it into account when the behavior. They would behavior more rationally.
3. Fair pricing – The modeling reduces price subsidies and award the consumers who mitigate risks. It gives consumers incentive to control losses
4. Reduce information risks – When there is uncertainty, the investors request for higher return. The modeling helps to lower the price.

Question 12

- A. –The ratio of assets to capital is much lower for P&C companies compared to life companies
 - Many life insurance products have an investment component, and policyholders will likely choose to surrender policies if they investment component is not performing well. P&C products typically do not have an investment component.
- B. –The bond size adjustment factor increases the RBC charge and is higher when there are a fewer number of bond issuers.
 - The RBC asset concentration factor doubles the asset risk charge for the company's ten largest investments, where the investments are arranged by issuer.

Additional Answers

- A. Life insurance contracts are actually a combination of insurance protection and long term investments. If life insurers returns are not acceptable, insureds are more likely to exercise options. In contrast P/C insurance generally only consists of insurance protection, so asset risk are less important.
 - Life insurance provides a fixed benefit, like \$100,000 at death. If the insurer purchase inflation sensitive assets, the returns may be too variable to support the fixed benefit. P/C benefits are inflation sensitive so it makes more sense to support them with inflation sensitive assets like stocks.
- B. **-Diversification-** the asset concentration factor doubles the RBC charge for the 10 largest investments, aggregated by name. this encourages insurers to diversify their portfolio and keep individual investments small to get a smaller RBC charge.
 - Concentration – number of issues – the bond –size adjustment factor adjusts the RBC charge based on the number of bond issuers the insurer has. The more issuers, the lower the adjustment factor. The adjustment penalizes the company for having too few issuers, and rewards it for having many issuers.

Question 13

- A. Excess and Surplus lines market – is meant to provide coverage for unusual risks those with high policy limits, or those that cannot find coverage in the admitted market in the state.
- B. –Agents and brokers must be specially licensed to place business with x/s and surplus lines insurers
 - there are minimum financial requirements for insurers looking to write these policies
 - There is a diligent search criteria in which producer must sign an affidavit that a diligent search of the admitted market was performed before policy was placed in X/S.

Additional Answers

- A. Purpose of E&S lines market is to insure unique risks that standard licensed insures do not cover.
- B. –Diligent search requirement. If risk/line isn't listed on the export list one must prove that risk cannot be admitted in the standard market.
 - Alien E&S insurers are required to hold capital in a US trust fund (\$2.5 million)
 - If alien E&S insurer cannot specifically identify and separate their surplus line, they need to hold even more in trust fund.
- A. Provides coverage to unusual risks that are rejected by the admitted insurers. Excess and surplus providers can quickly adapt to needs of customers.
- B. -Placement is done only by specially licensed producers
 - Placement can be made with excess/surplus insurer only after a diligent search of the admitted market
 - Excess and surplus insurers must be approved, and do have regulatory requirements related to capital and licensing.
- A. The E&S market provides coverage to risks for which no coverage or very minimal coverage exist in the admitted market. These risks usually are unusual, with unique characteristics or very high limits.
- B. -Surplus lines business must be placed by specially trained agents or brokers
 - Surplus lines insurers must meet the financial and managerial requirements of the state where they conduct business, as well as be approved by the state.
 - For business to be placed in the surplus lines market, a "diligent search" must take place first in

order to ensure no coverage exists in the admitted market.

- A. To provide insurance to unique risks, which have difficult underwriting characteristics or require a lot of capacity. These risks have few/no carriers in the admitted market willing to write them.
- B. Minimum capital requirements apply –above and beyond those of admitted market.
 - only specially licensed agents and brokers can place business
 - they must be licensed in their home state/country and “approved” in each state they want to write business.
- A. provide unusual coverage not available in admitted/primary market
- B. –subject to solvency and other regulations of DOI
 - must be approved to do business on a non-admitted basis
 - must meet some financial criteria
- A. Provide coverage for unique risks that are not available in the admitted market
- B. –Only licensed producers can place the business
 - The non-admitted insurers must meet certain financial requirements.
 - Companies must do a diligent search and show that coverage is not available in the admitted market before allowing access to the E&S market (unless coverage is already on the export list)

Question 14

- A. Prior approval
- B. –File and use – an insurer files the rates and can then begin using them
 - Use and File – an insurer can start using the new rates as long as the new rates are filed shortly after.
 - No file – an insurer is not required to file new rates.

Additional Answers

- B - State mandated rates: the state sets the rates for all insurers (usually for WC)
 - Flex File – no filing needed unless increase exceeds a certain percentage.
- C. –most of the large commercial lines were deregulated from rate and form regulations
- D. – No. Rates and forms are subject to regulation and review at any time regardless of the filing law.
McCarran – Ferguson require states to regulate, it does not require or mention prior approval

Question 15

- A. 1. Sherman Act still prohibits boycott, coercion, and intimidation
2 If states do not regulate an aspect of insurance, then federal anti-trust laws apply
3 A federal law that regulates a specific activity of insurance supercedes state laws with respect to that aspect or activity
- B. Positive - insurers could be more free to charge actuarially sound rates, with completion providing incentive to accurately predict costs (and avoid adverse selection)
Negative - if not careful, competition with insufficient regulation could lead to price wars where in a competitive market some insurers could low-ball prices, greatly expand market share, and then go insolvent, which could lead to other insurers going insolvent (via guaranty association fees). Demand by the public for overly strict regulation may then be implemented.

Additional Answers

- B - Positive: The cost of administration, companies and enforcement associated with regulation will be removed from insurance companies, which would help increase operating efficiency
- B -Positive: Open competition will allow insurance companies to react quickly to market trends
- B -Positive – good for large carrier who does not need protection. They have resources to create

credible rates and forms

- B -Negative- Removal of anti-trust protection may threaten the viability of advisory bureau rates these rates promote competition by allowing smaller insurers to exist.

Question 16

Sherman Anti-Trust Act – prohibits collusion in efforts to form a monopoly power
-insurers could no longer combine to form rates

Clayton Anti-Trust Act – prohibits price discrimination, except to the extent that price differentials could be shown to result from differences in operation results from competing in good faith.

-insurers needed to change rates appropriate to their operations. Couldn't undercut competition except where experience warranted.

Question 17

- Participation is compulsory
- It is expected to operate forever
- If in financial hardship, Federal government can tax and borrow.

Additional Answers

- It's compulsory
- Continues indefinitely
- Government can tax or borrow more if necessary

Question 18

1. Fulfill unmet needs of private insurers
 2. Social objective – fulfills social objective
-
1. TRIP – private sector cannot meet terrorism insurance needs (not enough capital)
 2. Social Security – meets social objective of providing insurance to low income/disabled etc.
 1. TRIA – some say private insurance still not have capacity to not have TRIA help and there has been an increase in availability so in that respect it is successful
 2. Sec Security/OASDI – successful, its compulsory so has ability to subsidize and give insurance to those who would not have been able to get it – social purpose was met as low income, disabled and retired get benefits

Additional Answers

- A. Fulfill a need unmet by the private market
-Provide a collateral social benefit
- B. –Unemployment insurance – considered uninsurable by the private market due to the catastrophe nature.
- B. Unemployment – Only 2/3 bother to collect and tends to prolong unemployment spells.
-not very effective
TRIA-not as much demand as anticipated; could potentially be covered by private market backed by cat bonds. Not very effective.
- A. Fulfill unmet need
Social purpose
- B. NFIP – Provides coverage the private market wouldn't write
OASDI – provides minimum financial benefits to all
- C. NFIP – lack of support (i.e. purchase of insurance)

OASDI – long term viability needs changes

- Does provide adequate base
- A. Provide efficiency – government can operate it more efficiently
Social purpose achieve social good.
- B. Provide efficiency, social security
*its funded by tax, it can be done by government more easily
Social purpose, TRIA
*to avoid economic disruption caused by terrorism risk
- C. TRIA – provide terrorism risk insurance, not very effective due to demand is not as great as expected.
Social Security – provide minimum financial security to all participants. Effective, but fund will be insufficient in the future.

Question 19

- A. Profit – $10,000 \times (400 - 300) = \$1M$
- B. % of vol prem = $\frac{10,000 \times 400}{10,000 \times 400 + 15,000 \times 800} = 25\%$
Profit = $10,000 \times (400 - 300) + .25 \times 2000(1000 - 2000) = 500,000$
- C. Company B should write all of the high-risk business since its premium rate is higher than company A. Company B should cede all business to the reinsurance facility. The operating loss from the facility will be spread between company A&B based on voluntary premium. Since company B's prem rate is higher, this will minimize losses.
- D. $10,000(400y - 300) + .25 \times 2000(800y - 2000) = 1M$
SM = 4.4My
y = 1.136
 $400y = \$454.55$

Question 20

- A. –Flood losses are predictable and catastrophic in nature
-Inability of the private market to charge the actuarially sound rate
- B. Concurrent causation – if on an open-perils homeowners policy, a loss was caused by a covered peril and a non-covered peril, then coverage would apply.
Efficient Proximate Cause – if a covered peril created the situation for a non-covered peril to cause damage (such a wind ripping open a hole that led to flood waters) then coverage would not apply
- C -Flood exclusion does not apply when the efficient proximate cause of the damage was a covered peril (such as wind)
-Flood exclusion is ambiguous and should be void.
- D. If the flood exclusion is void, flood losses would now be covered under homeowners. This would increase rates because insurers would charge the actuarially sound rate, which would not be subsidized like the NFIP flood policy.
- E. If the flood exclusion is void, consumers wouldn't need the NFIP anymore. They would leave the plan because they have coverage elsewhere and the plan would be discarded due to lack of participation.

Additional Answers

- A. Not able to change adequate rates predictable nature of where flood will occur.
- B. Concurrent clause – if losses are caused by both covered peril and excluded peril, it will be covered.
Efficient proximate clause – if losses are covered by covered peril which set the other causes in motion, the losses will be covered.

- C. Flood exclusion is ambiguous and should be ruled against the insurer
Violation of MS consumer protection law. Insurers say hurricane losses are covered but exclude the storm surge efficiently proximately caused by storm wind
- D. The rates will go up dramatically since it will now cover flood, and the rates will be much higher than NFIP because it was subsidized by government.
- E. Participation will drop dramatically, premium will drop as well. Without enough participation, premium and spread of risk, it is difficult to maintain a viable program.
- A. Unable to charge adequate rates, the predictable nature in which floods occur – by definition this is uninsurable.
- B. Concurrent causation- if a named peril and excluded peril both cause damage, the total damage should be covered.
Doctrine of Reasonable expectations – court will rule as to the reasonable expectations of the consumer regardless of insurers intent. (consumer expected to be covered when a hurricane hits)
- C. Alleged that flood exclusion was vague which means that it cannot be enforced – contract of adhesion
Alleged irreparable damage to MS residents and based on this that loss should be covered
- D. Since flood could be covered, insurers could include this in the rates and therefore rates would be increased dramatically.
- E. Participation would drop entirely since flood would be covered by HO-3 so the spread of flood risk in the NFIP would be reduced.
- A. –Predictability of where floods occur
-Inability to charge actuarially sound rates
- B. Concurrent Clause-Coverage should apply on an open-perils policy when a covered peril and excluded peril collectively cause a loss
-Efficient Proximate Clause-
Recovery should be allowed if both a covered peril and an excluded peril simultaneously cause a loss if the covered peril was the efficient proximate cause of loss.
i.e. The covered peril set the other causes in motion.
- C. -Count 3-Policy exclusions should be void because they are not clear and difficult to understand
-Count 4-Flood exclusion should be void because it is unclear and ambiguous
- D. Homeowners insurance rates would increase dramatically
-Insurers would charge full actuarially sound rate which is higher than NFIP rate.
- E. Participation would decrease
-Flood premium income would decrease
-Spread of risk would decrease
Then NFIP no longer a viable program
- A. –Because of the predictable nature of where floods will occur
-Due to the inability to charge actuarially adequate rates for these coverages, as they would be too high
- B. Doctrine of reasonable expectation – insureds had reasonable expectation that their losses would be covered so the insurer should honor it
Contract of Adhesion – the insurer wrote the contract and the flood exclusion wording is ambiguous and unclear, so the court should rule against the insurer and void the exclusion
- C -Proximate cause – MS attorney general alleged that wind was the proximate cause of the Katrina damage and that it set the other events in motion (ie. The flood) and therefore all of these damages should be covered.

- That the flood exclusion violated the MS consumer protection act, since insurers said that hurricanes were covered and yet excluded the damages due to storm surge of Katrina.
- D. Homeowners rates would increase dramatically, as flood insurance would now have to be included and actuarially adequate rates would be charged. Insurers would also have to pass on the prices of windpool assessments they faced, which would increase sales.
- E Participation in NFIP would decrease dramatically, and this would cause a decline in both the premium and spread of risk necessary to maintain a viable program.

Question 21

- A. –Provide insured 30 days coverage during which insureds can find new insurer
 - Provide “duty to defend” to insureds under the defense service by liquidated company before liquidation.
- B. –Limit on single claim
 - Net worth limit. Insureds with high net worth can absorb the losses
 - Claims from Insurer/reinsured is not covered. Insurers and reinsurers have ability to detect insurance company’s financial situation.

Additional Answers

- A. For insureds with claims, they should get paid (more promptly and adequately than without GFs)
- A. Refund of unearned premium for coverage which has not been provided. Sometimes the amount returned is capped though.
 - continuation of defense if they are in the middle of a claim dispute with another insurer
- B. –claim payments are capped at a certain amount
 - Large net worth restriction – Guaranty Fund will pay claim but may seek reimbursement from large net worth insureds.
 - Insureds may receive caps on the refund of unearned premium for coverage not yet provided.
- A. Interim coverage until new insurance can be placed
 - for insureds being defended by insolvent insurer proceedings stayed 60 days and fund picks up defense.
- B. Limit (for non wc) is (>\$50m) may not receive benefit, or may have to repay benefit in 3rd party cases.
- A. –Allows those with claims to get paid even though insurer insolvent
 - Allows consumers to choose insurer without worrying about insurer’s financial strength
- B. –Limit on claim eg \$300,000
 - High net worth exclusion –should be able to bear cost
 - Additional deductible (eg.\$100) has to be paid.
 - Trigger average – company is in insolvent status
 - large net worth deductible
 - Cap max of claim payment.

Question 22

- A. Test for Slowing paying for authorized reinsurers

Slow paying if: $\frac{\text{(amounts 90+ days overdue)}}{\text{Paid loss amounts + received in last 90 days}} >.20$

(excluding disputes)

Reinsurer A

Slow Paying? Yes

$$\frac{100}{(300-75)+50} = .364 > .20$$

Reinsurer A is Slow Paying

Provision = Max (.2 x unsecured recoverables, .2 x 90 days overdue)

Assuming all balances in dispute <90days.

$$\begin{aligned} &= \text{Max} (.2(500-100), .2 ([100])) \\ &= \text{Max} (80, 20) \\ &= \mathbf{20} \end{aligned}$$

Reinsurer B

Slow paying? No

$$\frac{50}{(200-10)+75} = .189 < .20$$

Reinsurer B is Not Slowing Paying

Provision = .2*(90+day balance overdue)

Assuming all balances in dispute <90days.

$$\begin{aligned} &= .2 (50) \\ &= \mathbf{10} \end{aligned}$$

Reinsurer C

C is unauthorized

Provision = (Unsecured Total Recovables)
+ (.2 x Amounts 90 days overdue excluding disputes)
+ (.2 x Amounts in dispute)
Subject to a cap of Total Recoverables

$$\text{Provision} = (100-10) + .2(50) + .2(25) = 105 \rightarrow \text{capped at total recoverables} = \mathbf{100}$$

Total provision = 80+10+100=190

Additional Answers

A. Alternative answer for reinsurer B and for total provision

Reinsurer B

Slow paying? No

$$\frac{50}{(200-10)+75} = .189 < .20$$

Reinsurer B is Not Slowing Paying

Provision = .2*(90+day balance overdue) + .2*(Amount in Dispute)

$$= .2 (50) + .2(10)$$
$$= 12$$

Total provision = 80+12+100=192

B. No

One of the following:

- If there is a provision of reinsurance for residual market tool, that will be a disincentive to be a servicing carrier.
- No provision is provided for residual market pools because these pools are mandatory and the insurers cannot control the speed of claim payments from them.
- Pools generally only report and pay losses every quarter so they typically have large provision for 90days or are characterized as slow paying.

No provision for market residual pool as deemed no/low credit risk due to joint and special liability nature.

Question 23

- A. 50M provision for reinsurance would appear in the liabilities section of the balance sheet
- B. None
- C. Move reinsurance from unauthorized insurers to authorized insurers. There is a greater charge for unauthorized reinsurers.
*Seek collateral from reinsurers. This can reduce parts of the provisions as well if insurers are unauthorized or slow paying authorized reinsurers.
- D. Unauthorized reinsurers often provide lower prices or better coverage. Company A may have to pay more in the authorized market.
*Seeking collateral can be costly. Insurers may have to pay to do so and may pass this cost on to policyholders in the form of a rate increases.
- E. In favor: GAAP users (investors) may be interested in the management estimate and could find this valuable.
Against: Provision for reinsurance would lose credibility, specifically if there is a large difference between the two, as is the case for Company A.

Additional Answers

- B. Statement of Actuarial Opinion (SAO)
- C. Demand timely payments from reinsurers
Seek more collateral from reinsurers
- D. Reinsurers may cancel coverage
-Reinsurers may charge more.
- C. Purchase less reinsurance

- require more security from unauthorized reinsures
- D. Increase risk of insolvency
- Increase cost of re-insurance

Question 24

- A. O/S case loss + DCC expense reserve = case reserve
For AY 2008 as of 12/31/09

$$\begin{aligned} \text{Case Reserve} &= \text{Incurred} - \text{Paid} - \text{Bulk} + \text{IBNR} \\ &= \text{Part 2} - \text{Part 3} - \text{Part 4} \\ &= 448 - 37 - 282 = 129 = 129,000 \end{aligned}$$

- B. Net case incurred loss & DCC = Case incurred = paid + case
Case Incurred for AY 2007 as of 12/31/08

$$\begin{aligned} \text{Case Incurred} &= \text{incurred} - \text{bulk} + \text{IBNR} \\ &= \text{Part 2} - \text{part 4} \\ &= 395 - 235 = 160 = 160,000 \end{aligned}$$

- C. Average net paid loss & DCC Severity/Closed w/pay
as of 12/31/07 for AY 07

$$\frac{\text{Paid}}{\text{Closed w/pay}} = \frac{\text{Part 3}}{\text{Part 5, section 1}} = \frac{20,000}{122} = 163.93 = 164$$

- D. IRIS 11 $\frac{\text{one yr res dev}}{\text{1}^{\text{st}} \text{ prior PHS}} = \frac{54,000}{1,100,000} = .049 = 4.9\% = 5\%$

- E. IRIS 12 $\frac{\text{2yr res. Dev}}{\text{2}^{\text{nd}} \text{ prior PHS}} = \frac{25,000}{900,000} = .028 = 2.8\% = 3\%$

- F. Declaratory judgment expenses are considered AAO expenses. Because of this they are not included in schedule P, Part 2 and have no effect on the IRIS ratios 11 & 12.

Question 25

*B/S item are mean value: Loss Revenue (LR), UEPR, Agent Bal (AB) and Surplus (PHS)

* I/S items are current year: WP, EP, Prepaid (PPE), Invest Inc (Inv Inc)

- A. $\text{FUND}_{IG} = \text{LR} + \text{UEPR} (1 - \text{PPE}/\text{WP}) - \text{AB}$
 $\text{PPE} = \text{COMM.} + \text{TLF} + \text{OTHER AQ} = \frac{1}{2} \text{ GenExp}$
 $= 160 + 40 + 195 + (1/2)(52)$
 $= 421$

$$\begin{aligned} \text{FUND}_{IG} &= (520 + 480/2) + (700 + 650/2)(1 - 421/1300) - (260 + 240/2) \\ &= 500 + 675 + (1 - .328) - 250 \\ &= 706.4 \end{aligned}$$

$$\begin{aligned} \text{INVGain}_{IT} &= \text{FUNDS}_{IG} * 1GR \\ &= (706.4)(8\%) = 56.512 \end{aligned}$$

- B. $FUNDS_{TOTAL} = LR + UEPR + PHS - AB$
 $= 500 + 675 + 800.25 - 250$
 $= 1725.25$
 $IG_{TOTAL} = 1GR(FUNDS_{TOTAL}) = 8\%(1725.25) = 138.02$
 $IG_{CAP \& SURP} = IG_{TOTAL} - IG_{IT} = 138.02 - 56.512 = 81.508$
- C. Companies do not hold assets on a direct basis (only net) and therefore do not receive direct investment income. Any amount of Part III (Direct) would be hypothetical.
- D. N/A
- E. Regulations like the IEE allocation of Inv. Inc. to LOB to monitor results by LOB. However two things to consider before pricing a internal profit analysis:
1. Allocation is arbitrary
 2. IEE is retrospective, pricing is prospective.

*Insurers may prefer to use profit models w/ leverage ratios instead.

Additional Answers

- A. Funds attributable to Insurance Txns = mean net loss reserves + mean net VEPR * [1 – prepaid exp / WP] – mean agent’s Balances
 Prepaid Exp = $160 + 40 + 195 + \frac{1}{2} * 52$
 $= 421$
 Funds Attributable = $\frac{1}{2} (480 + 520) + \frac{1}{2} * (650 + 700) * [1 - 421/1300]$
 $= \frac{1}{2} * (240 + 260)$
 $= 500 - 675 * 0.676 - 250 = 706.4$
 Investment Gain = $0.08 * 706.4 = 56.51$
- B. IG from C&S = Total IG – TG from funds attributable to insurance txns.
 (Doing the algebra where symbols follow their usual meaning) $\rightarrow (LR + UPR - AB + SURPLUS) - (LR + UPR(I - PE/ WP) - AB)$
 $= \text{MEAN UPR} * \text{PREPAID EXPENSES/WP} = \text{ALLOCATED SURPLUS}$
 $= \frac{1}{2} * (650 + 700) * 421/1300 + 800.25$ (\rightarrow Assuming all other figures in thousands)
 $= 1018.85$
 Investment Gain = $0.08 * 1018.85 = 81.51$
- C. Investment Income is earned on assets net of reinsurance. Part III is on a direct basis and there is no real meaning to investment income on a direct basis.
- D. The IEE is a retrospective measure of profitability. It shouldn’t be used for pricing because the pricing actuary’s context is perspective business. Also, the IEE can be used by regulators, company management, and investor for different objectives.
- A. $PPER_{HO} = [160 + 40 + 195 + .5(52)]/1300 \approx .3238$
 $IG_{FAIT_{HO}} = .08 / \frac{1}{2} (480 + 520) + \frac{1}{2} (650 + 700)(1 - .3238) - \frac{1}{2} (240 + 260)$
 $= 56.512$
- B. $TF_{HO} = 500 + 675 - 250 + 800.25 = 1725.25$
 $IG_{CS_{HO}} = .08 (1725.25) - 56.512 = 81.508$
- C. Part 3 is on Direct Basis while investment income made on net funds.

- D. IEE considers profitability by line but must remember that many #'s (Surplus/ InvInc) allocators. Allocation can give misleading view. Also, IEE is retrospective measure of profitability while investors may be more interested in prospective views.

Question 26

- A. Net U/W income: Premiums Earned = 225,000
 Losses Incurred = 85,500 – 82,500 + 135,000 = 138,000
 LAE Incurred = 22,300
OUE Incurred = 63,800
 Net U/W Income = 900,000
- B. Investment Gain: net invoice income earned= 350+5600+865+5+122=6942 (←Should already include investment expense since 'net.')
- | | |
|-------------------------------|--------------|
| + realized cap gains/losses = | <u>-3600</u> |
| Net Investment Gain = | 3342.00 |
- C. Net Income = ATB = 920 + 3342 = 4242
 + other income = F&S Changes = 725
 + net gains/losses from AB charges out = -200
 -dividends to PM = 100
- FIT = 1300
 Net Income = 3,367,000

Additional Answers

- A. UW Profit = EP – IL – EXPENSES RELATED TO PW AND LAE
 = 225,000 (135,000 + (85,500 – 82,500)) – 22,300 – 63,800
 = 900
- B. INVESTMENT INCOME : INV EARNED GAIN = REALIZED – INV EXP
 350 + 5600+ 865 + 5 + 122 – 5(DEPR) – 200(INV EXP) -3600
 = 3,137
- C. Net Income = UW Inc + Inv Inc + other Inc
- | | | | | |
|----------------|----------|--------|----------|-------------|
| Tax | PH Divid | AG Bal | Fin Chgs | |
| Other Income = | -1300 | + -100 | -200 | +725 = -875 |
| Net Income = | 900 | + 3137 | - 875 | = 3162 |
- A. U/W GAIN LOSS
- | | | |
|--|---------------|--------------|
| EARNED PREMIUM = | 225,000 | |
| LOSS + LAE INCURRED | -22,300 | LAE Inc |
| OTHER U/W EXPENSES (135,000 + (85,500 – 87,300)) | | LOSS INC. |
| | <u>63,800</u> | OTHERU/W EXP |
| Net U/W Gain = | 900 | |
- B. Net Invest Gain/Loss = Net Inv Income Earned + Realized Capital Gains
 = (350 + 5600 + 865 + 5 + 122) -200(inv exp) – 5 (depr)

= +3600
= 6737 – 3600
Net Inv Gain/Loss= 3137

C. U/W Gain/Loss	=900
+Net Inv Income	=3137
+ Finance Charge	=725
+ Agent Balance Charged Off	=-200
-Div to PH	=-100
<u>-Federal & Foreign Taxes</u>	<u>=-1300</u>
Net Income	= 3162

Question 27

- A. Exp benefits = $1.5k * 52 = 78k$ covered by deductible
Stat net income unaffected since reserves held net of recoverables.

Assume insurer does not hold collateral, then N/A assets is the amount overdue >90 days. Since they have not been billed, nothing is overdue so there is no non-admitted assets. Therefore, surplus is also unaffected.

- B. Insurer- risk they will not collect expected reimbursements
Insured – risk they will be forced with a deductible they can't afford.
Injured – risk insurer will not pay claim if insured does not pay deductible.

- C. Insurer- non-admitted charge
Insured – insurer must monitor financial well-being of insured
Injured – insurer liable for claim even if deductible not paid.

- D.
1. The amount reserves have been reduced because of anticipated deductible recovery. In this case, half the benefit has been paid so the amount reserves have been reduced by is $\frac{1}{2} (78k) = 39k$
 2. Amount of anticipated recoverable on paid loss. Half has been paid so amount is $\frac{1}{2} (78k) = 39k$

Additional Answers

- A. Tot benefits (loss) inc'd = $1.5k (12) = 18k$
Inc → no impact b/c reserves held net of reimbursement and paid amts offset w/ recoverable asset.
Surplus → no impact for same reason as above (if fully collateralized)
If not fully collateralized 10% of unsecured amount non-admitted.

- B.
1. Insurer- may not receive reimbursement for deductible amounts
 2. Employer– may not be able to pay deductible losses

3. Injured – insurer may not pay benefits if employer defaults

C.

1. Ins. hold 10% unsecured amounts as non-admitted
2. Ins. Must periodically monitor employer's credit-worthiness.
3. Ins. Is statutorily liable for benefit payment.

D. 1) Amount of resrv credit reflected for expected deductible reimbursements on unpaid.

2) Amount of carried asset for expected ded. Recoveries on pd. Amts.

A. Stat income: $(1,500)(52) 78,000$ total loss

Total loss is below the deductible so stat income is not affected.

Surplus: 10% of unsecured recoverable is non-admitted $(.1)(78,000)(.5) = 3,900$ of paid recoverable is non-admitted so surplus goes down by this amount.

B. Insurer – has the risk that it will not be reimbursed for the deductible layer by the employer
Employer – risk that it will be unable to pay the assessments made by the insurer.
Injured worker- risk that they may not receive their benefit if the employer cannot pay the deductible layer to the insurer.

C. Insurer = 10 % of unsecured recoverable is non-admitted
Employer – insure required to periodically check financial health of employer
Injured Worker –insurer liable to pay claim regardless of employers ability to pay.

D. The paid recoverable of \$39,000
The unpaid recoverable of \$39,000 (reserve credit)

Question 28

A.

= 100k

~~-750~~incl net income

~~-3500~~

~~-1500~~incl net income

~~+20k~~incl net income

~~-(6000-4500)~~

~~-(9500-9000)~~

~~2500~~incl net income

+(4000-500)

115,750

Additional Answers

$$\begin{aligned} \text{A. Direct Charge to Surplus} &= \Delta \text{URCG} - \Delta \text{Non-Admitted Asset} - \Delta \text{Prov. Reins.} - \text{Stock Divid} \\ &= (4000 - 500) - (6000 - 4500) - (9500 - 900) - 3500 \\ &= -2000 \end{aligned}$$

$$\begin{aligned} \Delta \text{surplus} &= \text{SAP Net Income} + \text{Direct charge to surplus} \\ &= 17,750 - 2,000 \\ &= 15,750 \end{aligned}$$

$$\begin{aligned} \text{09 Surplus} &= \text{08 surplus} + \text{a surplus} \\ &= 100,000 + 15,570 \\ &= 115,750 \end{aligned}$$

$$\text{A. } 100k + 17750 - 3500 - (9500 - 9000) - (6000 - 4500) + (4000 - 500) = 115,750$$

Question 29

$$\begin{aligned} \text{A. Net Admitted assets for year-end 2009} & \\ &= \text{bonds (book/ adjusted carrying value)} 15060 \\ &+ 28085 \text{ (fair value for common stocks)} \\ &+ 2545 \text{ (cash)} \\ &+ 75 \text{ (other invested assets)} \\ &+ 2500 \text{ (amounts recoverable from reinsurers)} \\ &+ 3500 \text{ (fund held by reinsured company)} \\ &+ 750 \text{ (net deferred assest)} \\ &+ 125 \text{ (investment income due and accrued)} \\ &52640 \end{aligned}$$

$$\begin{aligned} \text{B. Company's Liabilities} & \\ &= (6170 - 2340) + (3858 - 2305) \text{ Loss reserves net} \\ &+ (0 - 0) + (319 - 150) \text{ DCC reserves net} \\ &+ (758 - 329) \text{ A x O Reserves Net} \\ &+ 1270 \text{ Reinsurance Payable on Paid} \\ &+ 285 \text{ other expenses} \\ &+ 1280 \text{ ceded premium payable} \\ &+ 50 \text{ provision for reinsurance} \\ &8866 \end{aligned}$$

Question 30

$$\text{RBC Reserve Risk Charge} = [\frac{1}{2} (\text{Industry Avg Devt Comp Arg Dev}) / \text{Industry Avg Dev} * \text{Industry worstcase} + 1] * \text{Interest Margin} - 1$$

$$\begin{aligned} \text{GL RBC Reserve} &= [\frac{1}{2} (1.075 + 1.150 * 0.285 + 1 / 1.075) * 0.921 - 1 = (1.035 * 0.285 + 1) * 0.921 - 1 \\ \text{Risk Change \%} &= 19.3 \% \end{aligned}$$

$$\text{WC RBC Reserve} = [\frac{1}{2} (1.030 + 1.015) * 0.273 + 1] * 0.872 - 1 = (0.993 * 0.273 + 1) * 0.872 - 1$$

$$\text{Risk Change \%} = 10.8\%$$

$$\begin{aligned}\text{GL RBC Reserve Risk Change} &= \text{Unpaid Loss} * \text{GL RBC Change \%} \\ &= 15,000,000 * 19.3 \% \\ &= 2,895,000\end{aligned}$$

$$\begin{aligned}\text{WC RBC Reserve Risk Change \%} &= \text{unpaid loss} * \text{WC RBC Change \%} \\ &= 6,000,000 * 10.8\% \\ &= 648,000\end{aligned}$$

$$\begin{aligned}40 \% \text{ Retro-rated Adjusted} &= 648,000 * (1 - 40\% * 30\%) \\ \text{WC RBC Change} &= 570,240\end{aligned}$$

$$\begin{aligned}\text{Loss Concentration Factor} &= 70\% + 30\% * (\text{Largest line reserve}/ \text{total reserve}) \\ &= 70\% + 30\% * 15,000,000/15,000,000+6,000,000 \\ &= 70\% + 30\% * 0.714 = 0.914\end{aligned}$$

$$\begin{aligned}\text{Company's RBC} &= (2,895,000 + 571,240) * 0.914 \\ \text{Reserves Risk Charge} &= 3,167,229\end{aligned}$$

Additional Answers

$$\begin{aligned}\text{GL: } &(1 + ((1.150/ 1.075)) / 2 = 1.035 \\ \text{Risk Load} &= (1 + 0.285 * 1.035) * 0.921 - 1 \\ \text{GL Risk Charge} &= 15\text{M} * 0.1926 \\ &= \$2,889,621.80\end{aligned}$$

$$\begin{aligned}\text{WC: } &(1 + (1.015/1.03)) / 2 = 0.9927 \\ \text{Risk Load} &= (1 + 0.273 * 0.9927) * 0.872 - 1 \\ &= 10.83\%\end{aligned}$$

$$\begin{aligned}\text{WC Risk Charge} &= 6\text{M} * 10.83\% \\ &= 649,635.50\end{aligned}$$

Now Adjust WC for the retro-rated plans

$$\begin{aligned}\text{WC Risk Charge} &= 649,935.50 * [0.6 + 0.4 * (1 - 0.3)] \\ &= \$571,943.25\end{aligned}$$

No concentration factor

$$\begin{aligned}&= 0.7 + 0.3 * (15/(15+6)) \\ &= 0.9143\end{aligned}$$

$$\begin{aligned}\text{R4} &= [2,889,621.80 + 571,943.24] * 0.9143 \\ &= \$3,164,859.46\end{aligned}$$

RBC Reserving Risk Charge % =

[½ (Company coverage/ industry coverage * industry worst case + industry worst case) + 1] * discount rate - 1

$$\text{GL} = [\frac{1}{2} (1.15/1.275 * .285 + .285) + 1] * .921 - 1 = .19264$$

$$\text{WC} = [\frac{1}{2} (1.035/1.03 * .273 + .273) + 1] * .872 - 1 = .10832$$

$$\text{RBC Reserve Risk Charge} = \text{RBC \%} * \text{unpaid losses}$$

$$GL = .19264 (15,000,000) = 2,889,621.8$$

$$WC = .10832 (6,000,000) = 649,935.5$$

WC charge needs to be reduced by 30% for retrospective policies \rightarrow WC charge = $649,935.5(.4)(.7) + 649,935.5(.6) = 571,943.24$

$$\text{Total Reserving Risk Charge} = 2,889,621.8 + 571,943.24 = 3,461,565.04$$

This needs to be adjusted for the loss concentration factor

$$= 70\% * 30\% * (\text{reserves in largest line} / \text{total reserves}) = 70\% + 30\% * (15,000,000 / 21,000,000) = .91429$$

$$\text{RBC Reserve Risk Charge} = 3,461,565.04 * .91429 = 3,164,859.5$$

Question 31

- A.
- 2) A large amount of surplus aid could indicate that surplus is artificially inflated by ceding commissions, masking its true condition
 - 22) If the underlying reinsurance treaty is non-renewed the surplus aid will be returned, returning the company to its pre-insurance state
- B.
- 2) #1 Gross WP / Surplus
 - 22) #2 Net WP/Surplus
- C.
- 150/700 * 285
 - = 61.071(aid)/4000(surplus) = .153 > .15
 - IRIS #4 = 15.3%
- D.
- 2) #1 GWP/surplus = $(1000 + 800) / 400 = 450\%$
 - 22) #2 NWP/surplus = $(1000 + 800 - 700) / 400 = 275\%$
 - 222) #3 % Δ NWP = $[(1000+800-700)-850] / 850 = 29\%$
- E.
- IRIS #4 is abnormally high so retros #1 and #2 above should be recalculated without the surplus aid (61.071)
 - #1 = $1800 / (400 - 61.071) = 531\% < 900$
 - #2 = $1100 / (400 - 61.071) = 325\% > 300$
 - With the calculations the GWP/ Surplus ratio is still normal, however the NWP/Surplus ratio went from normal (275%) to abnormal (325%) w/o the surplus aid. This may indicate that the insurer needs more reinsurance. IRIS #3 is normal (<33%), but barely so, indicating that growth may be a contributing factor to the high NWP levels.

Additional Answers

- A.
- 1. High Surplus aid may indicate that management is uncomfortable with the amount of surplus the company has.
 - 2. High surplus aid has an effect on most of the other IRIS ratios.
- B.
- IRIS ratio #2 : NWP: PHS
 - IRIS RATIO #10 : Gross Agents Balances : PHS

C. Surplus Aid = $\frac{\text{Ceded Commissions}}{\text{Ceded Written}} * \text{Ceded reinsurance unearned premium}$
 = \$61.071

IRIS ratio #4 = $\frac{\text{Surplus Aid}}{\text{PHS}} = \frac{61.071}{400} = 15.3\%$

D. We will use adjusted surplus = Surplus – Surplus Aid to calculate other rates, where applicable

IRIS Ratio #1 → GWP:PHS = $\frac{1000+800}{400-61.07} = 5.3 = 530\%$

IRIS Ratio #5 → 2 year operating ratio

$$= \frac{2 \text{ yr L+LAE incurred} + \text{PH divs}}{2 \text{ year EP}} + \frac{2 \text{ yr other und ex - other inc}}{2 \text{ yr WP}} - \frac{2 \text{ yr InvInc}}{2 \text{ yr EP}}$$

= .9 + .218 - .067 = 105.1%
 = 105% (rounded)

IRIS RATIO #3: Change in NWP: $\frac{(1000+800-700)-850}{850} = 29.4\%$

E.

- Ratio 4: This is higher than 15%, so it indicated that the company is relying too heavily on surplus relief.
- Ratio #1: Even using adjusted surplus this value at 530% is well below the 900% when it would need to be above to be unusual.
- Ratio#5: the company is losing money, as evident by the 105% operating ratios which is above 100%. The company should reevaluate its underwriting criteria.
- Ratio #3: 29.4% is in the usual range of -33% to 33%; however it is very close to the top of the range. The company should make sure it has liquid assets and adequate reserves.

Alt. A

- A. If the underlying reinsurance treaty is nonrenewed the surplus aid will be returned, returning the company to its pre-reinsurance state.
- A. Some reinsurance contracts have high ceded % and high ceded commission rate. This artificially inflates surplus by an accounting sleight of hand
- A. High surplus aid may indicate that management is uncomfortable with the amount of surplus the company has
- A. High surplus aid has an effect on the other IRIS ratios

Alt. B

- B. Ratio 1 – Gross WP to Surplus
 Ratio 2 – Net WP to Surplus
 Ratio 7 – Gross Change in Surplus
 Ratio 10 – Gross Agents’ Balances to Surplus
 Ratio 13 – Estimated Current Reserve Deficiency to Surplus

Alt. C

$$[(150/700) * 285] / 400 = 15.3\% \text{ or}$$

$$[(150/700) * 285] / 400 = 15.3\% \text{ which rounds to } 15\%$$

Alt. D

$$\text{Gross WP to Surplus} = (1000+800)/400 = 450\%$$

$$\text{Net WP to Surplus} = (1000+800-700)/400 = 275\%$$

$$\text{Change in Net WP} = [(1000+800-700)-850]/850 = 29.4\%$$

$$\text{2-year Operating Ratio} = (700+650)/1500 + (250+375-125-75)/(1100+850) - 100/1500 = 105.1\%$$

$$\text{Change in Surplus} = (400-300)/300 = 33.3\%$$

$$\text{2008 Net WP to Surplus} = 850 / 300 = 283.3\%$$

Also accepted:

$$\text{Gross WP to Surplus} = (1000+800)/(400-61) = 531\%$$

$$\text{Net WP to Surplus} = (1000+800-700)/(400-61) = 324.6\%$$

$$\text{2-year Operating Ratio} = (700+650)/(1500+1500) + (250+375-125-75)/(1100+850) - (100+100)/(1500+1500) = 60.1\%$$

$$\text{Change in Surplus} = (400-61-300)/300 = 13\%$$

Alt. E**C. GWP/PHI**

531% - not exceptional company passes test.

- This is a measure of capacity on a direct and assumed basis. A high ratio (if > 900%) might mean insurer is writing too much business and quality of reinsurance should be reviewed.

NWP/PHS = 325% > 300% so test is exceptional (note had to adjust for surplus aid). Should look at quality of reinsurance, profitability of company.

Change in Net Writing = 29.4% < 33% (high end range)

Not exceptional but should review reserve ratios of company and identify reason for growth. Too much growth could be warning of insolvency if writing are increased for cash flow.

Surplus Aid ratio 15.27 > 15% – exceptional result. Insurer could be relying too heavily on reinsurance or seeking artificial surplus relief.

E. The surplus aid ratio produces an unusual result (15.27% > 15%). The other ratios should be recalculated by removing the surplus aid to see if it is masking financial issues. Regardless, the insurer's activity should be heavily reviewed.

D1) The GWP/PHS ratio is within the reasonable range. After adjusting for the surplus aid the ratio (531%) is still within the reasonable range.

D2) The NVP/PHS ratio is within the range of reasonable results. Though after removing the surplus aid, the ratio (325%) falls outside of the reasonable range. This might imply that the company does not have enough reinsurance and that the surplus may not be able to cover all liabilities.

D3) The Δ in PHS is within the range of reasonable results. This shows a healthy increase.

E. Surplus aid ration is way too high. Could be masking other problems 2 yr op. ratio is too high. Seems like inv. Inc is too low. Maybe they're investing too much in HO facilities, or inv. Expenses are too high. GWP to surplus is fine since <900%. Even after adj. for surplus aid (/ (1- .375)) it's still fine. NWP, however, is an issue after adj for surplus aid. It becomes 440% which is > 300%. Too much reliance on reins to cover up issues w/ surplus. Might not have enough to pay liabilities.

E. surplus ratio– the failure of test indicate surplus inadequacy and mgmt might be compensating through surplus aid.

IRIS #1 – adjusted ratio = $\frac{430\%}{1-.1527} = 531\%$ still passes so doesn't raise flags.

IRIS#2 – Adjusted ratio = $275/(1-.1527)=324\%>300\%$ now fails and indicates net premium is too high compared to current surplus.

TY00 – indicates the company is running at an operating loss over the last two years. This coupled with inadequate surplus is a major solvency risk.

E.
#3 NWP .2941 < .33, no extreme value but has seen significant growth as its close to +33%, may be concerned growing to meet current cost demands.

Question 32

$$\begin{aligned} \text{GAAP Goodwill} &= \text{Price} - [\text{FV Assets} - \text{FV Liabilities}] \\ &= 200 - [795 - 610] = 15 \end{aligned}$$

$$\text{STAT Goodwill} = \text{Price} - \text{Stat surplus} = 200 - 180 = 20$$

$$\begin{aligned} \text{GAAP Bonds} &= 50 + 190 \leftarrow \text{held to maturity valued at amortized cost.} \\ &\quad \frac{+31 + 50}{331} \leftarrow \text{not held to maturity are valued at market.} \end{aligned}$$

$$\begin{aligned} \text{STAT Bonds} &= 50 + 20 \text{ (in good standing gets amortized cost)} \\ &\quad + 80 + 60 \text{ (not in good standing gets min (amortized cost, market value).)} \end{aligned}$$

Real Estate held w/ intent to sell is the same between STAT & GAAP

$$\begin{aligned} \text{STAT Surplus} &= 1500 \text{ GAAP equity} \\ &\quad -15 \\ &\quad +20 \quad \left. \vphantom{\begin{matrix} -15 \\ +20 \end{matrix}} \right\} \text{goowill} \\ &\quad -331 \\ &\quad +210 \quad \left. \vphantom{\begin{matrix} -331 \\ +210 \end{matrix}} \right\} \text{bonds} \\ &\quad \underline{-34} \text{ non-admit uncollected premiums } > 90 \text{ overdue} \\ &1350 \end{aligned}$$

Additional Answers

Need to look at what is subtracted from GAAP equity to get SAP equity.

GAAP Equity: 1500

Uncollected premiums >90 non-admitted: Subtract 34

Real Estate: no change

Bonds: (1) SAP would value 50, GAAP also. No change.

(2) SAP would value 80, GAAP 190. Subtract 110.

(3) SAP would value 20, GAAP 31. Subtract 11.

(4) SAP would value 60, GAAP also. No change.

Acquisition: SAP Values : stat surplus + goodwill = 200

GAAP Values: (795 – 610) + goodwill = 200 (no change)

So: $1500 - 34 - 110 - 11 = 1345$

Question 33

- A. GAAP – usually undiscounted unless payment pattern is determinable or certain.
Fair value – discounted for time value of money and includes a risk margin.

Alt. A

- A. GAAP values loss rsvs without discount or risk margin, while fair value incorporates both elements.
- B. Ceded rsvs are an asset under GAAP, while ceded rsvs are subtracted from gross reserves (ie negative liability, not asset)
- C. Ceded retro reserves
- SAP hold ceded retro reserves as a negative liability, but doesn't net them out of gross reserves; this liability doesn't flow through the income statement.
 - GAAP allows for the netting of retro reserves against direct reserves, but defers the surplus gain from the agreement.

Alt. C

- C. GAAP recognizes present value of recoveries as ceded rsvs. SAP recognized nominal value of recoveries as negative write-in liability (doesn't affect sched. P)

- D. UEP →

SAP

Established to recognize prem over lifetime of policy

FV

UEP don't exist → premium recognized as revenue immediately

Alt. D

D. Fair value doesn't have an unearned pre rsv since fair value of prem recognized immediately, while SAP defers recognition of prem with UEP rsv.

E. SAP → PAC expensed immediately – no deferral
Fair value → no deferral of PAC

Alt. E

E. No difference.

Question 34

A.

1. No
2. No
3. Yes
4. Yes

B.

1. Not qualified since it is immaterial
2. Not qualified since the appointed actuary has reviewed another actuary's analysis and deemed it to be reasonable
3. Qualified because the actuary doesn't have the necessary information available to properly opine on the reserves.
4. Not qualified since the appointed actuary has placed reliance on another actuary's reasonable opinion.

Additional Answers

A.

1. No – not material, do not disclose.
2. No – reviewed work, do not disclose.
3. Yes – material amount of reserves. Disclose that there is not enough data.
4. Yes – disclose that AA relied on another actuary's opinion.

B.

1. No – not material – give reasonable opinion
2. No – reviewed and used another actuary's work. So reasonable opinion.
3. Yes – not able to form conclusion on material amount of reserve. Give qualified opinion.
4. No – give reasonable opinion as AA relying on another's opinion.

A.

1. Not required – immaterial
2. Not required – reviewed work

3. Required – disclose no review
4. Required – disclose reliance on work of another

B.

1. Not qualified – immaterial
 2. Not qualified – reviewed work and found reasonable
 3. Qualified – not enough info to review 20% of total reserve
 4. Not qualified – relies on opinion of other actuary
-

A.

1. No disclosure
2. No disclosure (reviewed analysis)
3. Disclose
4. Disclose

B.

1. SAO will be qualified to exclude 3 only because it is material and unreviewed
 2. No reason to qualify b/c not material
 3. No reason to qualify b/c actuary reviewed work and concluded it was reasonable.
 4. Can issue an unqualified opinion that discloses reliance on another actuary.
-

A.

1. No; immaterial
2. No; reviewed work by another actuary
3. Yes; insufficient information
4. Yes; need to state that he/she relied upon another actuary

B.

1. No; immaterial
 2. No; reviewed work of another actuary & found reasonable
 3. Yes b/c not enough info
 4. No b/c relying on another actuary's opinion
-

A.

1. Not required to disclose b/c immaterial
2. Not required to disclose if reviews other actuary's work and it seemed reasonable.
3. Disclose that independent analysis cannot be done with insufficient info.
4. Disclose that relied upon opinion of other actuary.

B.

1. Not qualified; it's immaterial
2. Not qualified, a review of reasonableness is sufficient to form an opinion.
3. Qualified, material part of reserves for which there is insufficient information, actuary cannot form opinion

4. Not qualified, material part of reserves but another actuary formed opinion which appointed actuary is relying on

A.

1. \$7 million; no disclosure necessary since it is not material
2. \$200 million; no disclosure necessary since the appointed actuary has reviewed the analysis and deemed it reasonable.
3. \$300 million; disclosure is needed as the amount is material to the opinion and appointed actuary is unable to express opinion due to insufficient data.
4. \$200 million; disclosure is needed as the amount is material to the opinion and appointed actuary did not review the analysis. Appointed actuary should disclose that they have relied upon on another actuary's opinion.

- B. Yes, the Appointed Actuary should issue a Qualified Opinion since there is insufficient information to opine on the \$300 million of reserves related to the Company's participation in an involuntary pool. However, the Appointed Actuary should issue an opinion on the remaining items' reserves that are deemed reasonable or immaterial.

Question 35

A.

1. Who the data was provided from the company
2. That the actuary checked the data for reasonableness and consistency
3. That the actuary reconciled the data to Schedule P

Alt. A

- A. – name of person that provided date and position
- evaluation date of the data used
- whether or not he actuary reconciled this data to schedule P

A.

1. That he reconciled the data to the Sched P part 1 of the company's current annual statement
2. That he reviewed that data for reasonableness and consistency
3. That his examination of the reserves included such review of the actuarial assumptions and methods used and such tests of of the calculations that he deemed necessary.

A.

1. Relied on data provided by _____
2. Reviewed the data for reasonableness and consistency
3. Reconciled the data with the Annual Statement

A.

1. In forming my opinion I have relied on data prepared by (name, affiliation to Company).
2. I have reconciled the data to be Part 1 of Sch. P
3. I have evaluated the data for reasonableness and consistency.

- B. Paid loss
Paid DCC
Case loss reserves

Case DCC reserves
Salvage and Subrogation recoveries
Earned Premiums

Alt. B

- Schedule P, Part 3 Schedule P, Part 2 – Part 4
- B. paid and case incurred loss and DCC expenses salvage and subrogation (Schedule P, Part 1)
loss and DCC ratios(Schedule P, Part 1)
- B. paid loss and DCC expenses
Case incurred loss and DCC expenses
Salvage and subrogation
Premium used in BF loss ratios
- B. paid losses, case incurred losses, paid DCC, case incurred DCC, Sal/Sub, earned premium (for BF)
- B. Paid and case incurred loss } Part 1
Paid and case DCC
Loss and DCC ratios
SDS recoveries
- C. - calendar year payments
- ending case reserves

Alt. C

- C. - calendar year paid loss and DCC
- year end case reserves
- C. CY payments } Sch P, Part 1
Ending Case Reserves }
- D. Calendar Year A&O payments (all lines)
Calendar year loss payments (all lines)

Alt. D

- D. CY A&O payments
CY loss payments
- D. paid losses for all lines combines
A&O payments
- D. A & O payments and loss payments used for estimating A&O Part 1

- E. Appointed Actuary: Under the 2004 requirement, the Appointed Actuary is expected to identify to company management and the auditor the data and/or attributes he/she believes are significant to the SAO.

Company: Under the 2004 data testing requirement the company requires that the auditor subject the data underlying the Appointed Actuary's loss reserve estimates to testing procedures.

Auditor: Under the 2004 requirement, the auditor should obtain an understanding of the data identified by the Appointed Actuary as "significant." The requirement ensures that the auditor will become aware of the data and/or data elements that the Appointed Actuary identified as being significant. But, not all data identified as significant by the Actuary will necessarily be tested in the statutory financial audit; this is a matter of auditor judgment as well as auditor assessment of materiality.

Alt. E

- E. AA: inform the auditor the data or attributes actuary believes is significant to the SAO
Auditor: determining the audit scope and designing the test procedures
Insurer: instruct the auditor to subject the data underlying AA's estimation of loss reserves to the testing procedures.
- E. Ins. Co shall provide data to actuary and instruct the auditor to test the data.
- E. AA: needs to disclose to the auditor the data he thinks is significant for AA's analysis. But he is not responsible for the actual data testing
Auditor: Needs to-
 - Figure out which data to test, can use the data pointed by the AA or some other data
 - The final responsibility of the data testing is on the auditor.
 Management: Needs to communicate properly between AA and auditor and facilitate the testing. Also responsible for appointment for the AA and auditor.

Question 36

- A. Denominator = 50% * RBC requirement
 - <70% Mandatory Action Level
 - 70% to 100% Authorized Action Level
 - 100% to 150% Regulatory Action Level
 - 150% to 200% Company Action Level
- B. $\frac{180}{32+30\%} = 937.5\% \gg 200\%$ No action needed
- C. $12\% * 61 = 7.32$
 $20\% * 150 = 30$
 $\frac{180 - 7.32}{32 + 30\%} < 200\% \quad x > 118$

Min [7.32, 30, 118] = 7.32

Loss and LAE reserve may increase to 70, increase by 70 – 61 = 9

D.

9 > 7.32

This is a risk of material adverse deviation exists

E. XYZ next to RBC action level: Company action level

Commissioner: no action needed

XYZ: Submit a report to commission, let commission know how XYZ will increase capital.

Alt A. & B.

A.	RBC Range
Company	75%-100%
Regulatory	50%-75%
Authorized	35%-50%
Mandatory	<35%

Denominator = RBC requirement, in this case 32

B. $RBC = \frac{\text{Adjusted Surplus}}{\text{RBC Requirement}} (\leftarrow \text{I am assuming there are no non-tabular discounts}) = \frac{150}{32} = 4.68$

There is no current action level. The company has sufficient surplus to capital.

Question 37

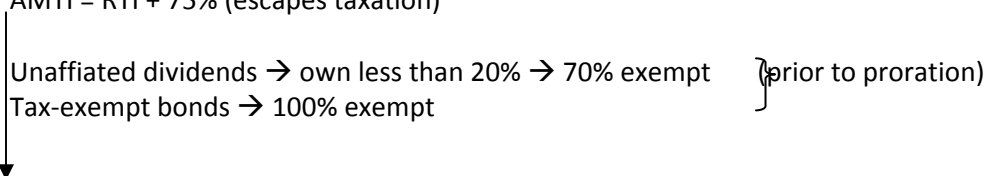
A. MTC = if AMIT > RIT, AMIT – RIT
Assuming 20% tax rate on AMTI, w/ 35% on RTI

AMIT = 20% (96) = 19.2
RIT = 35% (50) = 17.5
1.7M

Alt. A

A. $96 (.2) = 19.2$
 $50(.34) = \underline{17}$
2.2

B. AMTI = RTI + 75% (escapes taxation)



$$96 = 50 + 75\% [5 (.85)(.7) + X(.85)]$$

X = 68.66M of tax exempt bond income

$$\begin{aligned} \text{RTI} &= -30 \text{ (stat)} \\ &+ 50 \text{ taxable} \\ &+ 68.66 * 15\% \text{ (proration non-taxable)} \\ &+ 7 \text{ (realized cap gains)} \\ &+ 5 (.3 + .15 (.7)) \leftarrow \text{dividends} \\ &+ 20\% (125 - 100) \leftarrow \text{UPR adj} \\ &+ \text{disc adj} \end{aligned}$$

$$44.324 + \text{disc} = 50$$

$$\text{disc} = 5.676$$

$$= \text{EOY discount} - \text{BOY discount}$$

$$= (1 - \text{factor}) (425) - (1 - .95)(450)$$

$$- \text{End of year avg rsv factor} = .934$$

Alt. B

B. AMTI = RTI, +75% (exempt)

$$96 = 50 + 75\% (.595 (5) + .85 (x))$$

Tax Exempt Bond Coupon x = \$68.7M

RTI = UW = 20% UPR + Change in Disc. Amt. + taxable inv income

$$50 = -30 + 20\% (125 - 100) + [425 (1 - y) - 450 (1 - .95)] + 50 + 5 (.405) + 7$$

Avg Res Disc at end Y = .909

C. Assume 20% is what matures on both exempt and taxable

$$\begin{aligned} \text{Pre} - 500\text{M} \rightarrow \text{projected RTI} &= 50 - 20\%(50) - 20\%(15\%)(68.66) \\ &= 37.94 \end{aligned}$$

$$\begin{aligned} \text{Projected AMTI} &= 96 - 75\% (85\%)(20\%)(68.66) \\ &= 75.19 \end{aligned}$$

Income is maxed when .2AMTI = .35RTI or AMTI = 1.75RTI

Let X = investment in taxable

500-X = investment in tax free

$$\begin{aligned} \text{RTI}_{2010} &= 37.94 + x (.06) + (500 - x) (.15)(.04) = 40.94 + .06x - .006x \\ &= 40.94 + .054x \end{aligned}$$

$$\begin{aligned} \text{AMTI} &= 75.19 + [40.94 + .054x - 37.94] + 75\% (85\%)(500-x)(.04) \\ &= 78.19 + .054x + 12.75 - .0255x \\ &= 90.94 + .0285x \end{aligned}$$

Want 1.75 (40.94+.054x) = 90.94 + .0285x

$$.066x = 19.295$$

X = 292.35M invested in taxable

