15. (2.5 points)

An insured in a retrospectively-rated workers compensation plan currently pays a basic premium of $26,820. The following parameters apply to the insured's policy:

Standard Premium	$100,000
Expense Ratio (e)	$20,000
Expected Losses	$70,000
Tax Multiplier	1.00
Loss Conversion Factor	1.17
Entry Ratio @ G	1.00
Entry Ratio @ H	0.75

The insured believes that the insurance charge embedded in the current basic premium is unfair and cites the following unlimited loss ratios from five similarly-sized competitors doing business in the same industry:

Competitor	Loss Ratio
1	70.0%
2	105.0%
3	52.5%
4	87.5%
5	35.0%

a. (2 points)

Compare the net insurance charge in the current basic premium for this policy to the net charge based on the provided competitor loss ratio experience.

b. (0.5 point)

Discuss the appropriateness of using the basic premium derived from the competitor data to price this policy.

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QUESTION 15

Total Point Value: 2.50 **Learning Objective: B5a**

Sample Answers

Part a: 2.00 points

Sample 1

b = e – (c – 1) * E[A] + c * I

26,820 = 20,000 - .17 * 70,000 + 1.17 * I

I = 16,000 $I/_{E[A]} = 16/_{70} = .229$ $E[A]/_{P} = 0.7$

LR	#	# above	% above	Charge	r (entry ratio)
0	0	5	1	.5+1*.35/.7 = 1	
.35	1	4	.8	$.3+.8*\frac{(.525-.35)}{.7} = .5$	.35/.7 = .5
.525	1	3	.6	$.15+.6*\frac{(.7-.525)}{.7} = .3$	.75
.7	1	2	.4	$.05+.4*\frac{(.875-.7)}{.7} = .15$	1
.875	1	1	.2	$0+.2*\frac{(1.05-.875)}{.7} = .05$	1.25
1.05	1	0	0	0	1.5

Charge at 1.0 = .15

.75 = Savings(.75) + 1 – Charge(.75)

.75 - 1 + Charge(.75) = Savings(.75)

.75 – 1 + .3 = Savings(.75) = .05

Charge(1.0) – Savings(.75) = .15 - .05 = .10 = $I/_{E[A]}$

The net insurance charge of .229 embedded within the basic premium is higher than the competitor analysis charge of .1.

Sample 2

L_R = 70,000 LR = 0.70

L_H = 52,500 LR = 0.525

Charge I → b = e – 0.17 * (70) + cI

I = 16,000 (current)

Competitors Charge = $\frac{0+0.35+0+0.175+0}{5} = 10.5\%$

Competitors Savings = $\frac{0+0+0+0+0.175}{5} = 3.5\%$

[10.5% - 3.5%] * 100,000 = 7,000

16,000 current charge vs. 7,000 implied charge, insured has a point

Part b: 0.50 points

Sample 1

Using the charge derived from competitor analysis is not appropriate because competitors may have a different mix of business and therefore have different aggregate loss curve that would produce different and not comparable insurance charges.

Sample 2

Not appropriate, basic premium includes expenses that could vary significantly from company to company.

Sample 3

It may not be appropriate to use competitor data to price the policy due to differences in certain risk characteristics although the nature of business is the same. For example, there will be differences in operations, locations, safety programs, morale of employees which varies across companies. This will result in different loss distribution, and hence, produce different insurance charge.

Sample 4

The data of 5 risks is not credible, of much less credible than the industrywide data going into the NCCI table M. The data on the 5 risks has low credibility and is not appropriate.

Examiners Report

Part a:

The intent of this part was for the candidate to compare the net insurance charge embedded in the insured's current basic premium to the net charge from the competitor's loss ratio data (produced by building a table M using the loss ratio data or by calculating the charge and savings directly).

This required the candidate to understand the basic premium formula to back into the current insurance charge (either converted or not converted were acceptable) and also understand table M building to determine the net charge produced by the distribution of competitor data.

While building a table M was the most common approach to determining the net charge based on competitor data, there were candidates that successfully calculated the net charge using either a graphical/geometric approach or by directly calculating the charge and savings without building a table.

Common mistakes included failing to recognize the need to build a table M to determine the charge based on the competitor data, failing to draw a proper comparison between the two net charges (% of SP vs % of E), and minor mathematical errors.

Part b:

Candidates needed to identify why either the expense component or net insurance charge imbedded within basic premium might vary between the insured and competitors.

A common mistake was that many candidates identified potential differences between insured and competitor's data, but failed to make a connection as to what impact those differences would have on basic premium.

For example, only stating that mix of business could vary between insured and competitors was not sufficient to receive full credit. In this case, for full credit, the candidate would need to discuss how different mix of business would impact the aggregate loss distribution and thus the net insurance charge/basic premium.

Candidates who only stated that competitor loss ratios are volatile/small sample size did not receive credit. Candidates that commented on the small sample size/volatility in loss ratios *and* resulting low credibility in the competitor data distribution received credit.