

EXAM 5, FALL 2014

6. (2.25 points)

Given the following information:

- Projected ultimate pure premium, including LAE = \$450.
- Underwriting profit provision = 5%.
- Projected average premium per exposure = \$750.

| Expense Category | Selected Expense Ratio | % Fixed |
|--------------------------|------------------------|---------|
| General Expenses | 6.0% | 75% |
| Other Acquisition | 9.5% | 75% |
| Taxes, Licenses and Fees | 2.8% | 25% |
| Commission and Brokerage | 12.0% | 0% |

a. (0.5 point)

Calculate the indicated average rate using the all variable expense method for determining expense provisions.

b. (1 point)

Calculate the indicated average rate using the premium-based projection method for determining expense provisions.

c. (0.75 point)

Assume the historical average premium per exposure on which the selected expense provisions are based is \$675. Discuss whether the result calculated in part b. above is excessive or inadequate.

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EXAM 5 FALL 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

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|---|------------------------------------|
| QUESTION 6 | |
| TOTAL POINT VALUE: 2.25 | LEARNING OBJECTIVES: A5, A6 |
| SAMPLE ANSWERS | |
| Part a: 0.5 point | |
| <p>All variable</p> $V = 0.06 + 0.095 + 0.028 + 0.12 = 0.303$ $\text{Indicated rate} = 450 / (1 - 0.05 - 0.303) = 695.52$ | |
| Part b: 1 point | |
| <p>Using the premium-based projection method</p> $\% \text{ fixed} = 6.0\% * 75\% + 9.5\% * 75\% + 2.8\% * 25\% = 12.325\%$ $\text{Fixed expense} = 12.325\% * 750 = 92.44$ $\% \text{ variable} = 30.3\% - 12.325\% = 17.975\%$ $\text{Indicated avg rate} = (450 + 92.44) / (1 - 5\% - 17.975\%) = 704.24$ | |
| Part c: 0.75 point | |
| <p>Projected ave. Prem (\$750) is higher than the historical one (\$675). Using prem based method to evaluate fix expense assumes fix expense scales with prem. This is not very accurate since #1. Some fix expense does not depend on size of policy; 2. Fix expense may trend differently from prem. So, fix expense may be over-estimated, and result in (b) excessive.</p> <p>The result in part b is excessive. Since the expense ratios were calculated using an Avg Prem of 675, the true fixed expense amount is $(675 * .12325) = 83.19$. However, in the rate calculation an avg prem of 750 was used, which means our fixed expense amount was estimated to be $(750 * .12325) = 92.44$. Since this estimated fixed expense is greater than the true fixed expense of 83.19, the indicated rate is excessive.</p> | |
| EXAMINER'S REPORT | |
| <p>Candidates were expected to know how to calculate the expense provisions and the indicated average rate, as well as understand the limitations of premium-based projection method for calculating expenses.</p> <p>Most candidates scored well on parts a and b. However, part c required a deeper understanding of the underlying concept with a more in-depth discussion and most candidates didn't receive full credit.</p> | |
| Part a | |
| <p>Candidates were expected to know how to calculate the expense provision assuming all expenses vary proportionally with projected average premium, then calculate the indicated average rate using the pure premium method.</p> | |

EXAM 5 FALL 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

Most candidates correctly calculated the variable expense provision and the indicated average rate.

The most common mistake was calculating the indicated average rate change instead of the rate.

Part b

Candidates were expected to know how to calculate the fixed and variable expense provisions then calculate the indicated average rate using the pure premium method.

Most candidates correctly calculated the fixed and variable expense provisions and the indicated average rate.

Common mistakes included calculating the indicated average rate change instead of the rate and applying the fixed expense provision to the pure premium instead of the projected average premium.

Part c

Candidates are expected to understand the limitations of premium-based projection method for calculating expenses. Specifically, they should know that if the projected average premium differs from the historical average premium upon which selected expense ratios were based, then the fixed expenses and the resulting indicated rate would be inaccurate.

Most candidates correctly stated that the indicated rate in part b was excessive but were not able to fully discuss the underlying reasons.

Common mistakes included:

- Stating that expenses were distorted instead of fixed expenses only.
- Not fully discussing how the difference in average premium distorts the fixed expenses.
- Providing the correct support but reaching the wrong conclusion on the adequacy of the indicated rate in part b.
- Incorrectly comparing the indicated rate in part b to the historical average premium to determine its adequacy.