7. (2.5 points)

An insurance company began writing personal automobile policies in 2011. Given the following information for the insurance company:

Calendar/ Accident Year	Written Policies	Ultimate Loss & LAE ($000)
2011	44,000	14,250
2012	48,400	19,500
2013	53,240	22,000

Variable expense ratio	20%
Profit and contingency provision	5%
Fixed expense per exposure	$50

- Expense and profit provisions are not expected to change.
- Policies have six-month terms, are written uniformly throughout the year, and include one automobile per policy.
- The company is currently charging an average premium per policy of $500.
- The annual loss trend factor = 3%.
- The data is fully credible.
- When calculating the indication, consider data from all three years.
- Rates are assumed to be effective July 1, 2014, and in effect for six months.

Calculate the overall indicated rate change, including justification for the selection of projected ultimate pure premium.

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QUESTION 7

TOTAL POINT VALUE: 2.5 | **LEARNING OBJECTIVE: A6**

SAMPLE ANSWERS

Accepted Answer 1

Accident Year	Written Exposures	Earned Exposures	Trend Period	Trend Factor	Trended Ultimate Loss & LAE	Projected Pure Premium
2011	22,000	16,500	3.5	1.109	15,803,204	957.77
2012	24,200	23,650	2.5	1.077	20,995,570	887.76
2013	26,620	26,015	1.5	1.045	22,997,388	884.00
Total		66,165			59,796,163	903.74

Written Exposures = Written Policies / 2
Earned Exposures = 0.75 * Current Year Written Exposures + 0.25 * Prior Year Written Exposures
Trend Period = Time between 7/1/AY and 1/1/15 (Average Accident Date when rates in effect)
Trend Factor = 1.03 ^ Trend Period

Projected Pure Premium is based on all three years of data, since the data is fully credible.

Indicated Rate = (903.74 + 50) / (1 – 0.20 – 0.05) = 1,271.65
Indicated Rate Change = 1,271.65 / 1,000 – 1 = 27.2%

Accepted Answer 2 (justification of pure premium selection only):

Given that the data is fully credible (though maybe not for individual years), I will select an average of the latest two to determine Pure Premium. AY 2011 seems like an outlier.

Accepted Answer 3 (justification of pure premium selection only):

I chose a three year weighted average to calculate the pure premium which is slightly higher than the straight average as I wanted to give more weight to more recent Pure Premium which have more exposures.

EXAMINER'S REPORT

This question tested candidates' knowledge of how to calculate written and earned exposures, trend losses, justify a pure premium selection from preliminary indications, and calculate a rate and rate change.

The first portion requires knowledge that each six-month policy represents one-half of an exposure and a conversion of those written exposures to an earned basis to match the Accident Year losses presented. Candidates struggled most with this portion of the question. Most simply took the Written Policies as presented and used those as the exposure figure in calculating pure premium. Some recognized that each policy represented one-half of an exposure, but did not

convert the result to an earned basis. Some converted the Written Policies figures to an earned basis correctly, but did not recognize that each policy represents one-half of an exposure. Few candidates made both necessary adjustments correctly.

Most candidates trended losses and calculated a pure premium appropriately. Some used an incorrect trend period or failed to properly justify their pure premium selection. Regarding the justification, candidates should offer a reason for making the selection that they did, not simply state that they chose some average. Most of the offered justifications were found reasonable and acceptable. Less common was the inclusion of an exposure trend, which is not appropriate for this question as the exposure base is not inflation-sensitive.

As the company in the question only began writing policies in 2011, the average accident date for Accident Year 2011 is actually skewed slightly later than halfway through the year. This would make the trend period for AY 2011 3.375 years rather than 3.5. Given the rather nuanced nature of this adjustment, the use of either 3.375 years or 3.5 years was deemed acceptable. Few candidates noticed this subtlety, and many used a 3.5 year period.

Candidates generally handled the rate and rate change calculations well. Some employed a loss ratio approach instead of a pure premium approach, which was found acceptable.