1. (1.5 points)

Given the following information:

Calendar Year	Average Earned Premium at Current Rate Level	Average Written Premium at Current Rate Level
2014	$210	$212
2015	$220	$224
2016	$235	$240

- The projected annual premium trend = -2%.
- Fourth quarter 2016 average earned premium at current rate level = $236.
- Fourth quarter 2016 average written premium at current rate level = $242.
- The company uses a calendar-accident year aggregation of data for indications.
- All policies are annual.
- Rates are in effect for one year.
- The rate revision is planned to be effective January 1, 2018.

a. (1 point)

Calculate the premium trend factor for each year using two-step trending.

b. (0.5 point)

Identify two scenarios that could lead to a negative premium trend when analyzing average premium at current rate level.

CONTINUED ON NEXT PAGE

QUESTION 1	
TOTAL POINT VALUE: 1.5	**LEARNING OBJECTIVE: A2**
SAMPLE ANSWERS	
Part a: 1 point	

Sample 1

First trend to avg. written date of 2016Q4 – 11/15/2016

2nd trend to avg wrt date – 7/1/2018 which is 1.5 + 1.5/12 = 1.625

CY	Step 1	Step 2	Trend Factor
2014	242/210	$0.98^{1.625}$	1.115
2015	242/220	$0.98^{1.625}$	1.064
2016	242/235	$0.98^{1.625}$	0.997

Sample 2

Step 1 Trend factors:

CY	Step 1 Trend Factor	Step 1 Trend Period
2014	240/210 = 1.143	1/1/2014 to 7/1/2016
2015	240/220 = 1.091	1/1/2015 to 7/1/2016
2016	240/235 = 1.021	1/1/2016 to 7/1/2016

Step 2 Trend factor:

CY	Step 2 Trend Factor	Step 2 Trend Period
2014	$(1\text{-}2\%)^2$ = .9604	7/1/2016 to 7/1/2018 = 2 yrs
2015	$(1\text{-}2\%)^2$ = .9604	7/1/2016 to 7/1/2018 = 2 yrs
2016	$(1\text{-}2\%)^2$ = .9604	7/1/2016 to 7/1/2018 = 2 yrs

Total Trend factor:

CY	Step 1	X	Step 2	= Total
2014	240/210	X	.9604	1.0976
2015	240/220	X	.9604	1.0477
2016	240/235	X	.9604	0.9808

Sample 3

EP trend from mid of every calendar year to mid of Q4 2016 (step 1), from mid of 2016Q4 to Jan 1, 2019 (step 2).

2014 $236/210 * (1\text{-}2\%)^{2.125} = 1.077$

2015 $236/220 * (1\text{-}2\%)^{2.125} = 1.028$

2016 $236/235 * (1\text{-}2\%)^{2.125} = 0.962$

Sample 4
First trend period: 7/1/AY → 7/1/2016
Second trend period: 7/1/2016 → 1/1/2019 → 2.5 years

	first step trend	second step trend	trend Factor
2014	235/210 = 1.119	$0.98^{2.5}$ = 0.951	1.064
2015	235/220 = 1.068	$0.98^{2.5}$ = 0.951	1.016
2016	235/235 = 1	$0.98^{2.5}$ = 0.951	0.951

Sample 5
Look at calendar year year-over-year changes to EP & WP

CY	EP	WP
2014		
2015	+4.8%	+5.6%
2016	+6.8%	+7.1%

Looking at 4Q16 averages compared to CY would mean looking at 7/1/XX vs 11/15/XX avg. I will use an average of all 4 data points for retro trend which is 6.1%. Projected trend is -2% so I will use that for prospective.

Retro trend from 7/1/XX – 7/1/2016
Prosp trend from 7/1/2016 – 1/1/2019 → 2.5 yrs

CY	Trend Factor
2014	$(1.061)^2$ $(0.98)^{2.5}$ = 1.0683
2015	$(1.061)^1$ $(0.98)^{2.5}$ = 1.0087
2016	$(1.061)^0$ $(0.98)^{2.5}$ = 0.9507

Part b: 0.5 point

Any two from the following sample responses:

- A shift towards geographic regions with lower average premiums, resulting in decreasing average premiums
- Insureds tend to choose lower policy limit in the future
- Insureds tend to choose higher deductible in the future
- A shift in the mix of business towards classes with lower premiums
- Aging insureds receiving lower age factors in premium calculation
- Obtain another insurer with lower average premium
- An underwriting shift to focus on writing better risks (which typically have lower rates) could shift the mix of business and lower average premiums
- Deflation (rather than inflation) could cause negative premium trend for inflation-sensitive exposure bases

EXAMINER'S REPORT

Candidates were expected to understand how to determine premium trend factors and the circumstances that can cause changes in the average premium level.

Part a

Candidates were expected to calculate premium trend factors for each year using two-step trending. Several approaches were accepted for the current trend factor based on the data provided in the question, and candidates were expected to calculate the appropriate projected premium trend period based on their selected approach.

Common errors included:

- Using written premium in the denominator to calculate the first step trend factor.
- Projecting to an average earned date when the first step trend factor trended to an average written date, and vice versa.
- Selecting a historical annual premium trend that was much too high or too low based on the data provided if using a selected trend to calculate first step trend factor.
- Calculating the premium trend factor for only one year.
- Calculating the projected premium instead of the premium trend factor.

Part b

Candidates were expected to provide two distinct, reasonable explanations for why premium at current rate level may have negative trend.

Common errors included:

- Not providing enough detail (e.g. "change in limits" or "mix of business shift" without commentary on directionality of shift).
- Mentioning negative rate changes (either during the experience period or in the future). Premium trends should be analyzed at current rate level.
- Mentioning shrinking or growing book size without focus on average premium
- Explanations for why loss costs or expenses may have negative trend.
- Stating that a decrease in the inflation rate would lead to negative premium trend. A decrease in the inflation rate is not the same thing as a negative inflation rate (i.e. deflation), which is a valid explanation if the exposure base is inflation-sensitive.