5. (4 points)

A company is reviewing the rate level adequacy. Given the following information for a book of business:

- All policies are annual.
- Current rates have been in effect for three years.
- New rates will be in effect for 18 months beginning on July 1, 2013.
- Annual premium trend = -1%.
- Annual loss trend = +3%.
- Loss adjustment expense provision = 2.5% of loss.
- Historical expense ratios:
    - Fixed = 6%.
    - Variable = 30%.
- Underwriting profit and contingencies provision = 5%.
- Ultimate losses are estimated using the reported development technique.
- On January 1, 2014, the company will reduce agency commissions by 3% of premium.

Calendar Year Ending	Earned Premium ($000s)
December 31, 2011	$2,163
December 31, 2012	$2,120

	Reported Losses ($000s)				
Accident Year	12 months	24 months	36 months	48 months	60 months
2008	$780	$928	$1,030	$1,083	$1,094
2009	$765	$921	$1,004	$1,053	
2010	$760	$920	$1,012		
2011	$805	$966			
2012	$890				

Calculate the indicated rate change.

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Exam 5 Question #5

(f = 6%, v = 30%, Q = 5%, V* = 27%)

*agency commission = variable expense -3%   Annual Policy

	12-24	24-36	36-48	48-60	60+
Selected ATAF reported Losses:	1.200965	1.100036	1.050147	1.010157	1

$$\frac{1030+1004+1012}{928+921+920}$$

↓

Judgmentally Selected

	Reported Losses	CDF-ULT	Loss Trend	LAE loading	Projected ult claims
2011(24)	966,000	1.166933	$1.03^{3.25}$	1.025	1,271,943.715
2012(12)	890,000	1.401446	$1.03^{2.25}$	1.025	1,366,387,864

↘ = 1.200965 $\times 1.100036 \times 1.050m7 \times 1.0101s7$

Trend Period [07/01/20xx-Avg DOL $[\underbrace{(03/01/2013\text{-}12/31/2014\ PY)}_{10/01/2014}]$

2011=3.25

2012=2.25

	EP	On-level factor*	Premium Trend	Projected Trended Premium
2011	2163000	1.00	$0.99^{3.25}$	2,093,490.054
2012	2120000	1.00	$0.99^{2.25}$	2,072,597.876

*Already on-level as no rate change in past 3 years

Trend period: $\underbrace{\text{Avg written date of CY 20XX EP}}_{01/01/20XX} - \underbrace{\text{Avg written date of (07/01/2013-12/31/2014 PY)}}_{04/01/2014}$

2011=3.25

2012=2.25

Indicated Rate Change = $\frac{LR+F}{I-V-Q_r}-1=\frac{0.633288+0.06}{1-0.28-0.05}-1=+3.476\%$

LR= $\frac{1{,}271{,}943.715+1{,}366{,}387.864}{2{,}093{,}490.054+2{,}072{,}597.876}=\frac{0.63328}{\square}$

	1/3 period	2/3 period
	↑	↑

V approx in forecast period= $\frac{07.01.2013-31.12.2013\times 0.30+01.01.2014-31.12.2014\times 0.27}{07.01.2013-31.12.2014}$

= 1/3(0.3)+2/3(0.27)= 0.28

OR

	12-24	24-36	36-48	48-60
	Rpt	Loss Dev	Δ	
08	1.19	1.11	1.05	1.01
09	1.20	1.09	1.049	
10	1.21	1.1		
11	1.2			
Sel	1.2	1.1	1.05	1.01
To ULT	1.400	1.167	1.0605	1.01

CY	Loss	LDF	Trend Fact	LAE	Trended Dev Losses’
2011	966,000	1.167	$1.03^{3.25}$	1.025	1,272,017
2012	890,000	1.400	$1.03^{2.25}$	1.025	1,364,978

Prem (1/1/12 - 4/1/14)

CY	EP	Trend	Trended Ep	LR
2011	2,163,000	$.99^{3.25}$	2,093,490	.6076
2012	2,120,000	$.99^{2.25}$	2,072,598	.6586
				Avg: .6331

Ind Change		Ind Change
$\dfrac{.6331+.06}{0.67}$	= 1.0345	+ 3.45%

PLR 7/1/13 - 1/1/13 = 1 - .3 - .05 = .65

1/1/14 - 12/31/14 = 1 - .27 - .05 = .68

WTD 1/3 (.65) + 2/3 (.68) = .67

b. A common error was to say the premium trend is used to bring historical premium to expected future cost level which is stating what the premium trend does but not why you'd do it. The other common mistake was to mention rate changes as part of the premium trend.

c. Candidates often compared average premium to total premium instead of historical premium to current level premium. The other common mistake was to compared written premium to earned premium instead of historical premium to current level premium.

d. Candidates scored very well on this part. When candidates missed points it was due to not responding to the actual question asked but instead describing how the issue could be addressed.

3. The question presented an analysis for a rate indication. The candidate was requested to provide 5 improvements for the analysis and briefly explain the purpose of each. Suggesting improvements to the company's operation did not address the question asked and did not receive credit.

   The majority of candidates recommended and received full credit for at least four enhancements to the analysis. Many recommended and received full credit for five. Those that did not receive credit for all 5 recommendations didn't attempt an answer or suggested enhancements that did not improve the analysis. Additionally, some candidates confused various concepts (for example, "trend losses to ultimate"), provided a response that summarized prior enhancements, were too general in their recommended improvement, or simply identified a shortcoming in the analysis without offering an enhancement, and did not receive credit.

   Candidates generally struggled to receive credit for briefly explaining the purpose of each recommendation; most candidates received less than full credit on four of the five explanations requested. Most candidates did not provide an explanation or attempted to give further explanation of the enhancement without explaining its purpose -- these did not receive credit. Many candidates restated a version of the original recommended improvement to the analysis in their explanation of the purpose (i.e. "Earned premium can be adjusted to the current rate level. This makes sure that all premiums are on-level."), which did not get credit for explaining the purpose of the bringing the premium to current rate levels.

4. Many candidates did not identify the need to adjust historical loss ratios for the future 2012 level. Some did not develop on-level-factors or apply them appropriately to the historical loss ratios, while others did not apply loss trend to the historical loss ratios. Some thought that the 2012 on-level earned premium was the only on-level adjustment needed, but this number was provided and the historical loss ratios still need adjustment for future levels. We also frequently saw misidentified loss trend periods (2 years instead of 3, 1.5 years instead of 1, etc.).

5. In general, this question was completed well although there were a couple common errors on this question.

1. Most candidates recognized an adjustment needed to be made for the commission change, but the adjustment wasn't consistently done correctly.

2. The trend period for losses and premium was often determined incorrectly. Although rates were in effect for 18 months, candidates are expected to know to properly determine trend period.

6.

a. More than half of the candidates provided enough components of IBNR for both claims-made and occurrence to get full credit. Many candidates named only the pure IBNR component but did not state that it was the only difference between the policies. No credit was granted for candidates stating that Occurrence has IBNR and Claims-Made does not, because Claims-Made has IBNER, a component of IBNR.

   Other candidates named additional components of IBNR, such as claims in transit or reopened claims. No credit was granted or deducted for these additional components, unless they were assigned incorrectly.

   In general the majority of candidates seemed to understand the question and what was being asked. The most common mistakes were not including both Pure IBNR and IBNER in their contrast or simply stating that Claims-made has no IBNR.