

EXAM 6 – UNITED STATES, FALL 2016

15. (3.75 points)

An insurance company exclusively wrote private passenger automobile insurance from 2011 through 2013 and diversified into homeowners beginning in 2014. Given the following information from the company's Annual Statements:

Schedule P - Part 2 Summary (from 2015 Annual Statement)					
Year in Which Losses Were Incurred	Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year End (\$000 omitted)				
	2011	2012	2013	2014	2015
2011	113	118	126	133	139
2012	xxx	122	136	144	148
2013	xxx	xxx	141	147	159
2014	xxx	xxx	xxx	185	202
2015	xxx	xxx	xxx	xxx	236

	Annual Statement Year				
	2011	2012	2013	2014	2015
Earned Premium	147	165	178	237	325
Loss and LAE Reserves	107	117	135	176	215
Policyholders' Surplus	134	150	168	188	211
IRIS Ratio 11	xxx	3.7	14.7	12.5	20.7
IRIS Ratio 12	xxx	xxx	9.7	24.7	25.6
IRIS Ratio 13	xxx	5.8	7.5	20.5	?

a. (2.25 points)

Calculate IRIS Ratio 13 for 2015 and indicate whether it is in the range of usual values.

b. (0.5 point)

Identify two ways that IRIS Ratio 13 results can be distorted.

c. (1 point)

Briefly describe two observations based on the company's IRIS Ratios, and identify an additional analysis that may be relevant for each observation.

**SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 15</b>	
<b>TOTAL POINT VALUE: 3.75</b>	<b>LEARNING OBJECTIVE: C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 2.25 points</b>	
<p>Developed Loss &amp; LAE Reserve Ratio (2<sup>nd</sup> Prior Year) = <math>(135,000 + (159,000+148,000 + 139,000) - (126,000 + 136,000 + 141,000)) / 178,000 = 100.0\%</math></p> <p>Developed Loss &amp; LAE Reserve Ratio (Prior Year) = <math>(176,000 + (202,000 + 159,000 + 148,000 + 139,000) - (133,000 + 144,000 + 147,000 + 185,000)) / 237,000 = 90.7\%</math></p> <p>Average Reserve Ratio = <math>\frac{1}{2} \times (100.0\% + 90.7\%) = \boxed{95.4\%}</math></p> <p>Estimated Loss &amp; LAE Reserves Required = Average Reserve Ratio x Current EP  <math>= 95.4\% \times 325,000</math>  <math>= \boxed{309,916}</math></p> <p>Indicated Deficiency (Redundancy) = Estimated Reserves – Held Reserves  <math>= 309,916 - 215,000</math>  <math>= \boxed{94,916}</math> <i>deficiency</i></p> <p>IRIS 13 = Indicated deficiency (redundancy) / Current Year PHS  <math>= 94,916 / 211,000</math>  <math>= \boxed{45.0\%}</math></p> <p>Value is greater than 25%, so an unusual value.          ~~~~~</p> <p>Alternate calculation of prior year loss development also received full credit:          Candidates could calculate prior year loss development by <math>188 \times 0.207</math> instead of <math>(202,000 + 159,000 + 148,000 + 139,000) - (133,000 + 144,000 + 147,000 + 185,000)</math>.</p> <p>Candidates could calculate 2<sup>nd</sup> prior year loss development by <math>168 \times 0.256</math> instead of <math>(159,000+148,000 + 139,000) - (126,000 + 136,000 + 141,000)</math>.</p>	
<b>Part b: 0.5 point</b>	
<p>Any two of the following:</p> <ul style="list-style-type: none"> <li>• Significant changes in premium volume</li> <li>• Changes in product mix (property &amp; liability)</li> <li>• Surplus aid from reinsurance</li> <li>• Reserve strengthening/weakening</li> <li>• Change in reserving philosophy</li> <li>• Reinsurance commutation</li> </ul>	

## SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part c: 1 point

Any two of the following:

- Increasing ratios 11 & 13 – test with LOB IRIS ratio analysis
- Ratio 12 consistently greater than Ratio 11 indicating potential for intentionally understated reserves- (do additional one of the analyses below)
- IRIS 12 unusual for 2 years – analyze collectability of reinsurance
- IRIS 13 unusual – test with Ratio 3 for premium changes
- IRIS 7 (Change in PHS) is usual- check net income with IRIS 5 (2 yr operating ratio) or changes in surplus aid

Additional acceptable analysis included:

- Review the Ratios by line of business
- Review Notes to Financial Statements
- Look at Schedule P
- Review the 5 Year Historical Exhibit
- Review the SAO
- Interview management about reserving changes like strengthening or weakening
- Review commutations
- Review reinsurance for adequacy
- Study the IEE regarding the growth/profit by LOB by product

### EXAMINER'S REPORT

The candidates were expected to calculate IRIS Ratio 13, identify possible distortions in IRIS Ratio 13, and identify two analyses an actuary might complete in response to the observed IRIS Ratio results. The calculation portion of this question is demonstrated directly in the syllabus text. The commentary on IRIS ratios is also clearly explained in the syllabus text. Part c required some application that is not provided in list form in the syllabus.

### Part a

The candidates were expected to be able to do the IRIS 13 calculation and comment on the results.

Common mistakes included:

- Forgetting to include development on prior year reserves
- Calculating prior year reserve development incorrectly
- In calculating the average reserve ratio, adding the numerators of the two fractions and dividing by the sum of the denominators instead of taking the average of the two fractions
- Multiplying the average reserve ratio by something other than the current year EP
- Not indicating whether the ratio was in the usual range.

### Part b

## SAMPLE ANSWERS AND EXAMINER'S REPORT

The candidate was expected to be able to identify ways in which IRIS Ratio 13 could be distorted.

Common mistakes included:

- Not giving enough detail, as we did not give credit for answers like “reinsurance”, “surplus”, or “a catastrophe”.
- EP not leveled or trended “premium adequacy”
- Change in pooling % This is an error because Schedule P’s history is restated so this change by itself will not have an unusual impact on the ratio
- Focusing on exposures rather than reserves.
- Growing EP will lead to higher expected reserves
- Uncollectable reinsurance
- Emergence of asbestos and environmental claims
- Misstatement of reserves
- Inadequate reserves in prior years
- Repeating the same information twice

### Part c

The candidate was expected to be able to comment on IRIS ratios and identify additional analyses.

Common mistakes included:

- Giving answers like “Reserves are increasing” that are not based on the IRIS ratios.
- Calculating IRIS 3, using the EP given instead of the WP required.
- Explaining what might be causing the anomalies instead of identifying additional analyses.