23. (3.75 points)

The following information is available for an insurance company that began writing business in 2010:

Accident Year	Cumulative Paid Claims as of (months) 12	24	36	48
2010	$198	$285	$325	$347
2011	$1,220	$1,763	$2,044	
2012	$13,000	$18,750		
2013	$11,060			

Calendar Year	Paid ULAE
2010	$23
2011	$59
2012	$814
2013	$688

- The actuary has selected a 24-month cumulative paid claim development factor of 1.25.
- The initial expected claims for accident year 2013 are $31,500.
- Case outstanding for accident year 2013 as of December 31, 2013 is $5,720.

a. (1.25 point)

Estimate IBNR for accident year 2013 as of December 31, 2013 using the paid Bornhuetter-Ferguson technique.

b. (1.25 point)

Estimate unpaid ULAE for accident year 2013 as of December 31, 2013, using the classical technique and the results from part a. above.

c. (0.75 point)

State the key assumptions of the classical technique, and briefly comment on the appropriateness of utilizing the classical technique in estimating unpaid ULAE for this company.

d. (0.5 point)

Describe a refinement to the classical technique that can be used to derive a reasonable estimate of unpaid ULAE for this company.

CONTINUED ON NEXT PAGE

QUESTION 23

TOTAL POINT VALUE: 3.75 | **LEARNING OBJECTIVE: B3, B7**

SAMPLE ANSWERS

Part a: 1.25 points

24-Ult Paid = 1.25, selected 12-24=1.442 (simple avg)

AY	12-24
'10	1.439
'11	1.445
'12	1.442
	1.442

AY 2013 B-F IBNR = 11,060 + (1-1/(1.442*1.25))*31500
-11,060 -5720 = 8304.27

Part b: 1.25 points

CY	Paid ULAE	Paid Claims	ULAE %
10	23	198	11.62%
11	59	1307	4.52%
12	814	13585	5.99%
13	688	17113	4.02%

No obvious trend in %. 2010 High but very little weight given in weighted average
SELECTED = 1589/32201=4.92% ~5.00%

Unpaid ULAE for AY 2013 = 0.05 (1/2*5720 + 8304.27) = 558.21

Part c: 0.75 point

Assumptions:

- 50% of ULAE incurred at opening of claim and 50% for closing claim.
- The future cost and activity spent on unreported claims and reported and open claims is proportional to IBNR and case amount.
- Paid ULAE to paid claim has reached a steady state.

The company is growing which raises a concern about using the classical technique. But the growth seems to slow down in 2012 and 2013. Hence a ratio using 12&13 may be appropriate.

Part d: 0.5 point

The Kittel refinement was designed to handle a growing insurer. Instead of dividing the ratio by the sum of paid claims, divide by the average of the sum of paid claims & incurred claims.

EXAM 5 FALL 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT

Part a

Most candidates were able to correctly calculate 12-24 month link ratios and select 1.44 as the average. Most candidates correctly applied the 24-Ultimate link ratio to come up with a CDF of 1.80.

The most common mistake was to calculate unpaid losses rather than IBNR.

To note, very few candidates actually calculated the AY 2013 Ultimate Loss of 25,060, and then subtracted the 2013 Paid and the 2013 Case Reserves to arrive at an IBNR estimate. Instead, they calculated the unpaid losses of 14,000 (25,060-11,060), and then some of them subtracted the 5,720 case reserves to get the correct answer of 8,280.

Part b

Most candidates could correctly identify the final formula of the Classical Technique, which applied the ULAE ratios to ½ the case reserves and the IBNR estimate from part a. The most common error was to use the latest diagonal of the accident year triangle as the inputs for the denominators of the "paid-to-paid" ratios rather than the calendar year losses.

Many candidates also attempted to simply calculate a weighted average ratio by summing up the last diagonal and dividing by the sum of the ULAE figures. While this did give candidates a reasonable result, it did not follow the Classical Technique which specifically prescribed calculating year to year ratios, examining those ratios for any trends, and then making a ULAE ratio selection.

Part c

Most candidates correctly stated that the Classical Technique was not appropriate because of the fact that it was a new, rapidly growing company. Candidates generally got at least one of the assumptions correct, and many received full credit on this portion of the question.

Part d

Most candidates went with the Kittel Refinement as their refinement of choice for this question. Describing the refinement correctly was necessary to receive full credit. However, a lot of those candidates stated that the Kittel Refinement used the average of paid and reported losses in the denominator of the ULAE ratios, when it was actually paid & incurred (the text states that incurred includes reported plus IBNR losses).