20. (2.5 points)

Given the following data as of December 31, 2014:

Calendar/Accident Year 2014 Information:	
Exposure Units	36,000,000
Paid Claims	$8,700,000
Reported Claims	$20,300,000
Selected Ultimate Trended Frequency per 100 Exposure Units	0.42
Selected 12-Ultimate Reported Claims Development Factor	1.720
Selected 12-Ultimate Paid Claims Development Factor	2.960
Selected 12-Ultimate Reported Claim Count Development Factor	1.200
Expected Loss Ratio	44.5%
Rate per 1,000 Exposure Units	1.560

Additional Information:	
Accident Year 2012 Selected Ultimate Severity	$160
Severity Trend	5.0%

Accident	Reported Claims as of (months) in $000				
Year	12	24	36	48	60
2010	14,200	18,839	22,362	24,039	24,424
2011	14,100	18,707	22,205	23,870	
2012	15,300	20,299	24,094		
2013	14,700	19,503			
2014	20,300				

Accident	Paid Claims as of (months) in $000				
Year	12	24	36	48	60
2010	8,200	14,722	21,081	23,316	24,272
2011	8,300	14,901	21,339	23,600	
2012	8,900	15,978	22,881		
2013	8,400	15,081			
2014	8,700				

a. (1.5 points)

For accident year 2014, calculate the ultimate claims estimate under each of the following techniques:

i. Frequency-Severity Technique
ii. Reported Claims Development Technique
iii. Paid Claims Development Technique
iv. Reported Bornhuetter-Ferguson Technique

b. (1 point)

For each of the techniques listed in part a. above, briefly discuss whether the technique is appropriate to select the ultimate claims estimate for accident year 2014.

CONTINUED ON NEXT PAGE

EXAM 5 SPRING 2015 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION: 20

TOTAL POINT VALUE: 2.5

LEARNING OBJECTIVE(S): B3 / B8

SAMPLE/ACCEPTED ANSWERS:

Part a: 1.5 points

Frequency-Severity

Ultimate trended severity = 160 * 105^2 = 176.4
F-S Ultimate = 36M * 0.0042 * 176.4 = 26,672,000

Reported Claims Development

20.3M * 1.720 = 34,916,000

Paid Claims Development

8.7M * 2.960 = 25,752,000

Reported Bornhuetter-Ferguson

Sample 1

Earned premium = 36M * 1.560 = 56.160M
BF Ult = 20.3M + 56.160M * 44.5% * (1 – 1/1.720) = 30,761,000

Sample 2

Earned premium = 36M
BF Ult = 20.3M + 36M * 44.5% * (1 – 1/1.720) = 27,006,000

Sample 3

Earned premium = (36M * 1.560) / 1000 = 56,160
BF Ult = 20.3M + 56,160 * 44.5% * (1 – 1/1.720) = 20,310,000

Part b: 1 point

Frequency-Severity

Sample 1

I wouldn't use this technique since the selected ultimate severity is from 2012 and it's outdated.

Sample 2

There seems to have been an increase in reserve adequacy in the latest year. Since the Freq-Sev method uses paid data, it is unaffected by this change and is appropriate.

Sample 3

Yes, since you can make adjustments to frequency and severity separately it is less likely to be skewed by operational changes.

Sample 4

Frequency & Severity methods don't sufficiently consider the last reported point, which differs from others. I wouldn't use this estimate.

Reported Claims Development

I would not use this technique since the reported claims as of 12 months is extremely elevated (shock-loss, change in case adequacy?).

Paid Claims Development

Sample 1

The paid method seems appropriate. Although the 12mo LDF is rather highly leveraged, paid amounts and development appear stable so the ultimate should be appropriate.

Sample 2

Not appropriate, steady paid losses shown at 12 months, but doesn't recognize large reported losses, which may be accurate, for example a large unpaid claim.

Sample 3

The paid age to ultimate factor is too highly leveraged and should not be used.

Reported Bornhuetter-Ferguson

Sample 1

I would not use this method due to the elevated reported loss @ 12 months.

Sample 2

The B-F method produces more stable losses at early maturities and gives weight to actual losses and is appropriate.

Sample 3

The BF would be a better choice since it incorporates the higher reported claims while calculating an IBNR based on expected claims.

Sample 4

It seems like the rate per 1000 exposure is really low. The expected claims part is really low. I think we are underestimating the ultimate even though the reported development part is high.

EXAMINER'S REPORT:

General Commentary

Candidates generally performed well on this question, with many scoring full credit or close to it if they attempted the question. Examination leadership acknowledges a typo on the exposure base for this question, and notes that any reasonable assumption for the B-F a priori expectation was accepted in grading.

Part a

The candidate was expected to know how to compute ultimate loss estimates using the frequency/severity method, the paid loss development method, the incurred loss development method, and the Bornhuetter-Ferguson method.

Most candidates had no trouble computing the estimates using the paid loss development method and the incurred loss development. Some candidates struggled on the frequency/severity method and the B-F method. For the frequency/severity method, the most common mistakes were failing to trend severity correctly and applying the reported claim count development factor to ultimate frequency. For the B-F method, the most common mistakes were using the wrong development factor and not applying the loss ratio to the exposure base.

A few candidates chose to calculate and select their own loss development factors instead of using the ones provided, which was unnecessary, but accepted. In the B-F method, a few candidates used one of the other methods to determine ultimate losses instead of using the expected loss ratio method, which was also accepted.

Part b

The candidate was expected to have an informed opinion on whether or not each of the estimates calculated in part a. were reasonable, and discuss why or why not.

Candidates generally received full credit for the discussion of the paid loss development method, the incurred loss development method, and the B-F method. Many candidates struggled with the discussion around the F-S method, and had difficulty linking the pros and cons of the method itself to the case at hand.

EXAM 5 SPRING 2015 SAMPLE ANSWERS AND EXAMINER'S REPORT

The reported claim triangle indicated an apparent case reserve strengthening in AY 2014, given a rise in losses that was not seen in the paid triangle. Most candidates were able to recognize this, and thus recognize that the reported development method would lead to an overestimation of the ultimate losses.