20. (2.25 points)

Given the following data as of December 31, 2017:

Accident Year	Case Outstanding ($000) as of (months) 12	24	36	48
2014	50,400	51,150	35,100	9,600
2015	45,900	64,500	36,000	
2016	60,300	68,400		
2017	62,100			

Accident Year	Cumulative Paid Claims ($000) as of (months) 12	24	36	48
2014	10,800	21,600	129,600	276,000
2015	9,800	19,000	125,000	
2016	10,350	20,000		
2017	10,500			

Accident Year	Open Claim Counts as of (months) 12	24	36	48
2014	360	465	270	80
2015	340	430	250	
2016	335	450		
2017	345			

7.5%	Selected annual severity trend
1.05	48 to ultimate reported claim development factor

a. (0.5 point)

Evaluate whether there has been a change in the adequacy of case outstanding over the experience period.

b. (1.25 points)

Estimate the ultimate claims for accident year 2017 using the Berquist-Sherman adjustment.

c. (0.25 point)

Briefly explain the effect of the Berquist-Sherman adjustment in part b. above when compared to the result using unadjusted data.

d. (0.25 point)

Briefly describe a potential limitation to the Berquist-Sherman adjustment in part b. above.

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QUESTION 20

TOTAL POINT VALUE: 2.25 | **LEARNING OBJECTIVE(S): B2, B5**

SAMPLE ANSWERS

Part a: 0.5 point

Sample 1

	Unadjusted Average Case Outstanding (000s)			
Accident Year	12	24	36	48
2014	140	110	130	120
2015	135	150	144	
2016	180	152		
2017	180			

Yes. There has been a change in the adequacy of case outstanding since the avg case O/S has increased down the column, suggesting strengthening in case O/S adequacy level.

Sample 2

	Unadjusted Average Case Outstanding (000s)			
Accident Year	12	24	36	48
2014	140	110	130	120
2015	135	150	144	
2016	180	152		
2017	180			

Change in average case

12	24	36	48
-3.6%	36.4%	10.8%	
33.3%	1.3%		
0.0%			

Trend is different than severity trend of 7.5%. Assume that difference in trend is due to a change in case adequacy over the experience period.

Part b: 1.25 points

Sample 1

Adj Avg Case				
Accident Year	12	24	36	48

2014	144,893	131,531	133,953	120,000
2015	155,760	141,395	144,000	
2016	167,442	152,000		
2017	180,000			

Adj Reported				
Accident Year	12	24	36	48
2014	62,961,480	82,761,915	165,767,310	285,600,000
2015	62,758,400	79,799,850	161,000,000	
2016	66,443,070	88,400,000		
2017	72,600,000			

LDF				
Accident Year	12	24	36	48
2014	1.314	2.003	1.723	
2015	1.272	2.018		
2016	1.33			
2017				
Avg	1.305	2.0105	1.723	1.05
Cum	4.747	3.637	1.809	1.050

BS Adj Ultimate for AY 2017 = 72,600,000 x 1.305 x 2.0105 x 1.723 x 1.05 = 344,608,342

Sample 2

Adj Avg Case				
Accident Year	12	24	36	48
2014	145	132	134	120
2015	156	141	144	
2016	167	152		
2017	180			

Adj Case O/S				
Accident Year	12	24	36	48
2014	52,200	61,380	36,180	9,600
2015	53,040	60,630	36,000	

2016	55,945	68,400		
2017	62,100			

Adj Reported				
Accident Year	12	24	36	48
2014	63,000	82,980	1658,780	285,600
2015	62,840	79,630	161,000	
2016	66,295	88,400		
2017	72,600			

	12-24	24-36	36-48	48-Ult
LDF	1.31	2.01	1.72	1.05
Cum	4.755			

Ultimate claims AY 17 = 72,600 x 4.755 = 345,240

Additional
Graders also gave full credit to alternative development factor selections such as weighted average.

Part c: 0.25 point

Sample 1:
With the B-S adjustment, the ultimate claims estimate for AY2017 is not overestimated as compared to the unadjusted data.

Sample 2:
Case OS increased in recent years because of adequacy changes. Based on prior LDFs calculated from unadjusted data, applied to higher reported loss in year would have overestimated the ultimate.

Sample 3:
Results in b is lower compared to unadjusted data because not overestimated.

Part d: 0.25 point

Sample 1:
The Berquist-Sherman adjustment used in part (b) assumes that claim settlement rates have been consistent.

Sample 2:
The selection of the underlying trend in severity for this method required much care due to the sensitivity of reserve estimate & need for judgmental selection. If this trend is incorrect reserve estimates may be off by a lot.

Sample 3:
A limitation would be if our loss trend unexpectedly changes throughout the historical period.

Sample 4:
It highly depends on selected severity trend.

Sample 5:
Assumes that change in case outstanding severity is due to case adequacy change and not due to other factors like change in prioritization between large and small claims.

EXAMINER'S REPORT

Candidates were expected to apply the Berquist-Sherman case outstanding adjustment to adjust for changes in the adequacy of case outstanding. Candidates were also expect to know the limitations of the technique and understand how it impacts the calculated ultimate as compared to unadjusted techniques.

Part a

The candidate was expected to calculate the average case outstanding triangle and evaluate the triangle to identify that there has been a change (increase) in the adequacy of case outstanding over time.

Common mistakes included:

- Concluding the case reserve adequacy was decreasing.
- Examine only a single period (for example: 12 month average case per open claim). A change in the average case outstanding per open claim at a single evaluation does not provide sufficient evidence of case reserve adequacy changes.

Part b

The candidate was expected to apply the Berquist Sherman case outstanding adjustment to the data given. They were also expected to use the adjusted data to calculate the ultimate loss for AY 2017.

Common mistakes included

- Restating only the 2016 and prior average case outstanding diagonals using the 2016 diagonal as a basis and not restating the 2017 diagonal as well.
- Failure to apply the tail factor provided
- Applying the trend factor incorrectly (e.g., multiplied by trend factor or used 7% instead of 7.5%)

Part c

The candidates were expected to identify that the unadjusted loss development method would overstate ultimate loss when case reserve adequacy increases.

Common mistakes include:

- Concluding that the unadjusted loss development method would understate the ultimate loss.

- Describing the mechanics of the adjustment but not providing a comparison to the unadjusted result.

Part d

The candidates were expected to understand the limitations of the Berquist-Sherman case outstanding adjustment.

Common msitakes include:

- Identifying assumptions of the adjustment that could be violated instead of a limitation of the adjustment.
- Identifying when the technique is not appropriate.