20. (2.5 points)

Given the following information:

	Cumulative Closed Claim Counts as of (months)				Estimated Ultimate
Accident Year	12	24	36	48	Claim Count
2012	3,314	4,260	4,340	4,380	4,380
2013	3,390	4,404	4,550		4,596
2014	3,342	4,365			4,454
2015	3,607				4,509

	Months			
	12	24	36	48
Selected Disposal Rate:	0.800	0.980	0.990	1.000

	Cumulative Paid Claims ($) as of (months)			
Accident Year	12	24	36	48
2012	7,760	13,664	15,515	16,484
2013	8,797	13,543	16,824	
2014	7,821	13,928		
2015	9,113			

Accident	Parameter ("a";"b") for Two-Point Exponential Fit as of (months)			
Year	12	24	36	48
2012		(1,069 ; 0.00060)	(16 ; 0.00159)	(22 ; 0.00151)
2013		(2,080 ; 0.00043)	(19 ; 0.00149)	
2014		(1,187 ; 0.00056)		

- The relationship between the cumulative number of closed claims ("X") and cumulative paid claims ("Y") is: $Y = ae^{bX}$.
- The adjusted paid claims for calendar year 2015 are the same as the unadjusted paid claims.
- There is no development after 48 months.
- An all-year volume weighted average is used to calculate claim development factors.

Calculate ultimate claims for accident year 2015 using the Berquist-Sherman paid claim development adjustment.

CONTINUED ON NEXT PAGE

QUESTION 20

TOTAL POINT VALUE: 2.5 | **LEARNING OBJECTIVE(S): B5**

SAMPLE ANSWERS

Adjusted closed claim counts

	12	24	36	48
2012	3,504	4,292	4,336	4,380
2013	3,677	4,504	4,550	
2014	3,563	4,365		
2015	3,607			

Sample Calculations:
3,504 = 0.8 * 4,380
3,677 = 0.8 * 4,596

Construct the Cumulative Adjusted Paid Claims Triangle:
The latest diagonal is unadjusted
Age 12 uses the parameters of age 24, and Age 24 uses parameters of age 36 (interpolation)
Age 36 uses the parameters of age 36 (extrapolation)

Cumulative adjusted paid claims

	12	24	36	48
2012	8,751	14,719	15,785	16,484
2013	10,110	15,606	16,824	
2014	8,730	13,928		
2015	9,113			
Age-to-Age	1.604	1.075	1.044	1.000
Age-to-Ult	1.800	1.122	1.044	1.000

Sample Calculations:
8,751 =1,069 * exp(0.00060 * 3,504)
15,785 = 16 * exp(0.00159 * 4,336)

Ultimate:
Ultimate = 9,113 * 1.8 = 16,403

EXAMINER'S REPORT

Candidates were expected to:

- Derive a triangle of adjusted closed claims, using the selected disposal rates provided
- Derive a triangle of cumulative adjusted paid claims, using the appropriate parameters for each age
- Derive LDFs from the adjusted triangle and use these to calculate the ultimate

Although this question was based directly on an example in the Friedland text, candidates performed poorly on this question. Many candidates chose not to attempt this question.

Common mistakes included:

- Ignoring the selected disposal rates provided in the question and deriving historical disposal rates
- Adjusting the final diagonal, which should not have been modified
- Using incorrect parameters to calculate the adjusted paid triangle
- Not selecting a weighted average for the LDFs, as instructed

A large portion of candidate responses did not show any work or equations for the adjusted paid triangle. Candidates are reminded that the instructions to the exam indicate that calculations should be shown where necessary in order to maximize partial credit.