15. (4.5 points)

Given the following information:

COMPANY A

Paid Losses ($000s)

AY	12	24	36	48
2009	$400	$2,400	$9,600	$12,000
2010	$400	$2,400	$9,600	
2011	$400	$2,400		
2012	$400			

Reported Losses ($000s)

AY	12	24	36	48
2009	$800	$4,800	$12,800	$14,400
2010	$800	$4,800	$12,800	
2011	$800	$4,800		
2012	$800			

Reported Counts

AY	12	24	36	48
2009	2,000	3,000	3,000	3,000
2010	2,000	3,000	3,000	
2011	2,000	3,000		
2012	2,000			

Closed Counts

AY	12	24	36	48
2009	1,000	1,500	2,000	2,500
2010	1,000	1,500	2,000	
2011	1,000	1,500		
2012	1,000			

COMPANY B

Paid Losses ($000s)

AY	12	24	36	48
2009	$12	$45	$176	$230
2010	$4	$39	$192	
2011	$6	$51		
2012	$8			

Reported Losses ($000s)

AY	12	24	36	48
2009	$50	$144	$264	$278
2010	$34	$144	$288	
2011	$34	$147		
2012	$40			

Reported Counts

AY	12	24	36	48
2009	40	60	60	60
2010	40	60	60	
2011	40	60		
2012	40			

Closed Counts

AY	12	24	36	48
2009	20	30	40	50
2010	20	30	40	
2011	20	30		
2012	20			

- Both Company A and Company B write primary auto liability policies.
- On December 31, 2012, the two merge to form Company C.

a. (1 point)

According to the *Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves*, discuss two actuarial considerations for designing a reserve study for Company C.

b. (1.5 points)

Calculate three key diagnostics that an actuary would review to determine whether to combine historical data for Company A and Company B.

<QUESTION 15 CONTINUED ON NEXT PAGE>

15. (continued)

c. (1 point)

Assume the mix of business is comparable (i.e. similar limits, classes, territories, etc.) for Company A and Company B. Argue whether or not it is appropriate to combine the historical data to estimate unpaid claims for accident years 2012 and prior as of December 31, 2012 for Company C.

d. (1 point)

Assume that Company C's claims department will adopt Company A's claims practices. Argue whether or not it is appropriate to combine historical data to estimate unpaid claims for accident year 2013 as of December 31, 2013 for Company C.

CONTINUED ON NEXT PAGE

Exam 5 – Question #15 Part A

A. Differences in payment pattern: If the two company's differing structures, claims handling etc. lead to differences in how claims are paid, then combining the data for both into one reserve study could lead to distortions.

   Size of Companies (relative): If one company is much larger than the other, the distortions caused by the combined analysis could be immaterial.

   Or

A. Operational – need to look at how each company sets case reserves, rate of claim closure, emphasis in settling large vs. small claims, etc. These factors impact the results of various reserving techniques and can possibly distort them.

   Changes in book of business – look at policy limits, types of insured, etc. to determine differences between the 2 companies and changes over time that could influence how the data is combined or what reserving techniques are used.

   Or

A. Homogeneity
   We need to check if the data between Company A and B has the similar characteristics.

   Credibility
   If there are enough data in Company C to obtain credible and reliable results.

Exam 5 – Question #15 Part B (example 1)

B. Avg. paid per closed claim = paid/closed count

(A)

AY	12	24	36	48
2009	0.4	1.6	4.8	4.8
2010	0.4	1.6	4.8	
2011	0.4	1.6		
2012	0.4			

(B)

AY	12	24	36	48
2009	0.6	1.5	4.4	4.6
2010	0.2	1.3	4.8	
2011	0.3	1.7		
2012	0.4			

No trend or any other change

It seems avg. dollar paid per closed claim has a drop and during 2009 → 2008, but increase during 2010 – 2014

Paid to incurred ratio to check case adequacy = paid/reported.

(A)

AY	12	24	36	48
2009	0.5	0.5	0.75	0.833
2010	0.5	0.5	0.75	
2011	0.5	0.5		
2012	0.5			

(B)

AY	12	24	36	48
2009	0.24	0.3125	0.67	0.827
2010	0.118	0.271	0.67	
2011	0.176	0.347		
2012	0.2			

No trend or any other change

It seems there is an increase in case (may be case strengthen) in Year 2010 and 2011 @ 12 and 24 with the level drop back in latest year

Closed counts to reported counts to check settlement rates

(A)

AY	12	24	36	48
2009	0.5	0.5	0.67	0.83
2010	0.5	0.5	0.67	
2011	0.5	0.5		
2012	0.5			

(B)

AY	12	24	36	48
2009	0.5	0.5	0.67	0.83
2010	0.5	0.5	0.67	
2011	0.5	0.5		
2012	0.5			

No trend and exact match! It seems both settlement rates have not been changed

Exam 5 – Question #15 Part B (example 2)

All years weighted PP LDF's

	12-24	24-36	36-48
Comp A	6.0	4.0	1.25
Comp B	6.14	4.38	1.31

Similar PD dev.

RPTD CLM CNT

A	1.5	1.0	1.0	1.0
B	1.5	1.0	1.0	1.0

similar RPTD claim count dev.

Avg. PD

	12-24	24-36	36-48	48-ult.
A	400	1600	4800	4800
B	375	1500	4600	4600

avg. PD is slightly less @ comp. B

Exam 5 – Question #15 Part B (example 3)

B. Company A – Outstanding Sev.

AY	12	24	36	48
2009	400	1600	3200	4800
2010	400	1600	3200	
2011	400	1600		
2012	400			

Company B – Outstanding Sev.

AY	12	24	36	48
2009	1900	3300	4400	4800
2010	1500	3800	4800	
2011	1400	3200		
2012	1600			

Reported Development (A)

AY	12-24	24-36	36-48
2009	6	2.67	1.125
2010	6	2.67	
2011	6		

Reported Development (B)

AY	12-24	24-36	36-48
2009	2.88	1.83	1.053
2010	4.24	2.00	
2011	4.32		

Disposal Rate (A)

AY	12	24	36	48
2009	0.33	0.5	0.667	0.83
2010	0.33	0.8	0.667	
2011	0.33	0.5		
2012	0.33			

Disposal Rate (B)

AY	12	24	36	48
2009	0.33	0.5	0.67	0.83
2010	0.33	0.5	0.67	
2011	0.33	0.5		
2012	0.33			

E**xam 5 – Question #15 Part B (example 4)**

Company A – Average Paid

AY	12	24	36	48
2009	400	1600	4800	4800
2010	400	1600	4800	
2011	400	1600		
2012	400			

Company B – Average Paid

AY	12	24	36	48
2009	600	1500	4400	4600
2010	200	1300	4800	
2011	300	1700		
2012	400			

Avg. Case (A)

AY	12	24	36	48
2009	400	1600	3200	4800
2010	400	1600	3200	
2011	400	1600		
2012	400			

Avg. Case (B)

AY	12	24	36	48
2009	1900	3300	4400	4800
2010	1500	3500	4800	
2011	1400	3200		
2012	1600			

Paid-to-rpt. Ratio (A)

AY	12	24	36	48
2009	0.5	0.5	0.75	0.13
2010	0.5	0.5	0.75	
2011	0.5	0.5		
2012	0.5			

Paid-to-rpt. Ratio (B)

AY	12	24	36	48
2009	0.24	0.31	0.67	0.83
2010	0.12	0.27	0.67	
2011	0.18	0.35		
2012	0.2			

Exam 5 – Question #15 Part C

C. It is not appropriate to combine the historical data. Even though the counts for both companies develop in a similar pattern, losses do not. Average paid losses are increasing for company B after 2010. Average case O/S is inconsistent for company B → different practices in setting up case reserves. Development patterns for losses for AY 12 and prior will be distorted.

Or

C. Company B has very little data. It makes sense to combine it with A. From B we saw that the two companies have similar settlement patterns. Their avg. paid sev. Is also comparable. B's results were not as evident as A, but due to small size, fluctuation is expected.

Since mix of business is comparable would assume frequency patterns will also be similar. Distributional difference won't significantly distort results. Can use paid losses to estimate unpaid claims.

Or

C. From this settlement speed, each age is similar for A and B. Therefore it says that A and B can be combined. I think it is appropriate if you adjust case adequacy because severities similar, settlement patterns similar and B has little data so may not be credible to stand alone. Need to look into case adequacy though.

Exam 5 – Question # 15 Part D

D. If Company C adopts Company A's claim practices, it would be appropriate to combine A and B only if you adjust company B's historical data. Use B's case reserve to adjust along with other methods.

Or

D. It would be appropriate if we use the past development techniques. The reported development techniques we need to adjust though B's case outstanding method for the historical not enough to make an accurate estimate.

15.

a. The question asked for a discussion, but many candidates simple stated a consideration. Candidates needed both the consideration and something to tie it to either the data or an explanation of why it was important. The considerations had to relate in some way to a reserving study, and the candidate's logic and reasoning had to be valid.

   Candidates received only partial credit for lack of explanation. Some examples would be: (credibility) the data needs to be credible or (case reserve adequacy) case reserve adequacy should be considered.

   Very rarely did a candidate get zero credit on this part, unless the question was skipped. The majority of candidates got at least half credit.

b. Very few candidates lost credit on this part. Most candidates who showed three calculations got full credit. Simply listing three valid diagnostics received some credit, with some dialog on how each related to the data receiving more credit (but not full credit). Some common reasons for losing points:

   - Did not do three calculations
   - Only describing a calculation and not actually doing it
   - Calculations that didn't add any diagnostic value:
     - Case reserves (total not average)
     - Open claim counts
     - Loss ratios

c. Candidates generally did well on this question. Arguments either for or against combining the data were accepted, provided they were valid and logical. Some candidates lost points for not actually recommending to combine or not combine, but the most common reason for losing points was not explaining why whatever reasons from part b. were relevant (or not relevant).

d. Candidates did not do as well on this part. Simply re-stating the reasons from part c. did not get any credit. The arguments needed to be logical. Some candidates may not have read the question correctly, arguing why B should or should not use A's case reserving philosophy. Some candidates did not provide enough detail behind size difference implications which resulted in some lost credit.