18. (2 points)

a. (0.25 point)

Briefly explain the key assumption of the Bornhuetter-Ferguson method.

b. (0.5 point)

Briefly explain how the Bornhuetter-Ferguson method can be considered a credibility-weighted method and how the credibility is calculated.

c. (0.25 point)

Briefly describe one situation where the credibility-weighted assumption underlying the Bornhuetter-Ferguson method may not apply.

d. (0.5 point)

Explain whether the paid or reported Bornhuetter-Ferguson method is more responsive in a situation where claim ratios are increasing.

e. (0.5 point)

Compare and contrast the Cape Cod method and Bornhuetter-Ferguson method by providing one similarity and one difference.

CONTINUED ON NEXT PAGE

Exam 5 Question # 18

a. Key assumption: Losses reported (paid) to date do not tell you anything about the losses that are yet to be reported (paid)
(Unpaid) Unreported losses are better estimated based on an a priori initial expected ultimate.

OR

Assumes the actuary's a priori estimate is a better indicator of unpaid/unreported claims than experience to date

b. The method is considered a cred weighted method of the Development Method and Initial Expected.

Z (Dev Method) + (1-Z) Initial Expected Ultimate

Z

$$= The\ percent\ reported\ to\ date = \frac{1}{\underset{From\ development\ method}{cumulative\ dev.\ factor}} = \frac{1}{CDF}$$

OR

Cred weighting of Development and Expected Claim techniques, The weight is based on % paid (or % reptd.)

I.E: B-F Ult= % paid * Dev Ult + (1 - % paid) x Exp Cl. Ult

c. On a pattern that goes above 100% reported or paid You'll see this on lines with salvage + subrogation or short tailed lines with strong case reserves. The % reported amount (2) cannot go above 1 in credibility theory. Therefore, in this situation, in theory, the method shouldn't be used.

OR

Would not apply if % paid is greater than 100% (Violates credibility definition)

d. The reported method would be more responsive because the development method is responsive to increasing claim ratios, and the reported BF method will give more weight to the development method early on since % Rpt is often greater than % paid.

OR

Reptd is more responsive, since % rptd is usually greater than % paid, thereby putting more weight on the developed emerging exp. And less on the a priori estimate

e. Similarity- CC (Cape Cod) and BF methods both assume the unreported amount should be based off of another estimate and not developed as in the development technique. In other words, they both assume that experience to date in an AY doesn't tell you everything about future development.

   Difference: The two methods calculated the "initial expected" ultimate differently. The BF method relies on an a priori selected loss ratio and the CC method calculates the LR (or PP) using the losses to date divided by the "used up" premium. Therefore the CC method is more responsive.

OR

   Both methods are cred weighting of Dev &Exp Claims but B-F initial exp loss ratio is an a priori estimate, while Cape Cod determines IELR using reported losses & used-up premium

"thin" data. Credit was not given for candidates that referenced the other case outstanding method (references to claims made policies).

18.

a. The majority of candidates received full credit. Those that didn't receive full credit typically lost points because they didn't differentiate between total claim versus unreported/unpaid claim.

b. The majority of candidates received full credit. Those that didn't receive full credit were often mentioning the credibility calculation but were not mentioning to which method this factor would apply. Another common mistake was to weight Z with [Actual loss / reported / paid] instead of [Development Method Ultimate Loss/ reported / paid]

c. The majority of candidates did not receive full credit. A common mistake for candidates was that they were mentioning situation where BF method was not appropriate instead of referring to a situation where credibility weighting assumption itself of BF method was not appropriate.

d. The majority of candidates did not receive full credit. Most of the candidate identified the right method, but only a few had a clear explanation on why the reported method was more appropriate.

e. Most candidates received full credit on this part.

19. Candidates generally performed well on the calculation portion of this question.

Some candidates did not calculate frequency (claim counts / payroll) and simply multiplied the average of 2010 and 2011 claim counts by a severity selection to determine 2012 ultimate claims. This does not account for the 2012 exposure levels and was not awarded full credit.

Some candidates calculated the ultimate loss indication correctly and subsequently lost points by failing to calculate the indicated IBNR associated with the ultimate loss. A small portion of candidates calculated the IBNR for all 3 accident years rather than just 2012.

Some candidates did not justify their selections, as specified in the question. Additionally, a portion of candidates simply wrote out their selection in words; for example, writing "select average of 2010 and 2011" does not constitute a justification and did not receive credit.

There were some candidates that spent time converting the percentage reported factors to loss development factors and subsequently multiplying by the claim counts and severities. The mathematical equivalent of dividing by the percentage reported could have saved the candidates time. A smaller portion of candidates used the percentage reported figures to create triangles of counts and severities that were unnecessary and subsequently not used in their solution.