Chapter 12 – Case Outstanding Development Technique

<u>Method #1</u>

Start with the Case Outstanding and Incremental Paid triangles.

1) Calculate a triangle of Incremental Paid to Beginning Case ratios—make selections for each age.
2) Calculate a triangle of Case to Previous Case ratios—make selections for each age.
3) Use the selected Case/Previous Case ratios from Step 2 to fill in the bottom half of the Case O/S triangle.
4) Use the selected Incremental Paid to Beginning Case ratios from Step 1, multiplied by the Case O/S in Step 3 to fill in the bottom half of the Incremental Paid triangle.
5) Sum up the incremental payments to find the cumulative payments and ultimate claim estimate.

Assumptions: future claims are related consistently to claims already reported.

This method is most stable/appropriate when most claims are reported in the first year, so that it can more accurately measure the incremental paid to prior case ratio. If there are significant new reports in future periods, this ratio will not be as steady due to more moving pieces. This is because future payments include those included in prior case, but also payments on newly reported claims.

Advantages: useful when most claims are reported in the first year, or when evaluating report year triangles.

Disadvantages: most lines of business, on an AY basis, have significant reports after the first year. Additionally, there are no industry benchmarks to compare our selected ratios by age to, and these selections are not necessarily intuitive or something the actuary would have gained knowledge of through general experience. As a result, this method is not commonly used by actuaries.

<u>Method #2</u>

Method #2 is useful if the only piece of information we have available is the current case reserves. We could then use industry CDFs and the formula below to develop an unpaid claim estimate. Add paid claims to find the ultimate claim estimate.

$$Unpaid\ Claims\ =\ Case\ Reserves\left(\frac{(Reported\ CDF-1.00)\ x\ Paid\ CDF}{Paid\ CDF-Reported\ CDF}+1.0\right)$$

Advantage: we are able to develop an estimate of unpaid claims when the only piece of information we have is case outstanding (and industry CDFs).

Disadvantages: since this method is used when historical data and company CDFs are not available, we must use industry benchmarks which may prove to be inaccurate for the specific company. It may not be a good estimate for more recent years if CDFs are highly leveraged. Additionally, any individual large losses contained in the case reserves may distort the projection.

Though the algebra is not obvious, the above formula is equal to the following formula, which is more commonly used in practice, and accepted by the CAS (see Fall 2016, Q19 Part a, Sample Answer 2).

$$Unpaid\ Claims\ =\ Case\ Reserves\left(\frac{1-1/Paid\ CDF}{1/Rep.\ CDF-1/Paid\ CDF}\right)$$

Which is more intuitive to me since it is equal to:

$$Unpaid\ Claims\ =\ Case\ Reserves\left(\frac{\%\ Unpaid}{\%Reported-\%Paid}\right)$$

Where Case Reserves divided by % Case is an ultimate estimate, which is then multiplied by % Unpaid to estimate Unpaid Claims.