"Adjusting & Other" Reserves According to the "Loss-Activity Method"

Paul B. Deemer, FCAS, MAAA

Abstract

This paper presents an additional method for calculation "adjusting & other" claim handling expenses. The method is contrasted with other methods present in actuarial literature.

Keywords. Reserving, ULAE, Adjusting and Other Expenses, Claim Handling.

1. INTRODUCTION

Within the scope of the reserving exercise, establishing reserves for Adjusting & Other ("A&O") loss related expenses generally comes last, and in many respects are an after thought. The primary reason for this is the necessity of having established proper reserve levels for losses before attempting to establish reserves for expenses related to managing these losses. An additional factor in the low attention given to this reserve component is the relatively few methods available. This paper presents an additional method for reserving these losses.

The actuarial literature addressing the task of reserving Adjusting & Other loss related expenses includes "aggregate" methods which use loss data at a high level and are, generally speaking, less rigorous. These methods include the classical "paid-to-paid" method and the variation proposed by John Kittel. Other methods, such as those offered by Wendy Johnson, Donald Mango and Craig Allen are more intensive in the usage of data and assumptions. The "loss-activity" approach is properly considered with the former, and thus a detailed comparison is offered. Nonetheless, I will present a discussion contrasting the "loss-activity" method to the Johnson method.

2. APPROACHES TO "ADJUSTING & OTHER" RESERVING

2.1 The Reserving Mindset

As a preface to this paper, it is necessary to frame the discussion with the most general parameters and motivation for loss reserving. The reserving exercise is an effort to reflect ultimate financial reality under all insurance obligations for which the enterprise is liable (losses)

or due (premiums). At times the actuarial usage of professional jargon is loose, which can result in a redundant or misleading understanding. What is assumed in the following presentation is:

1. At a certain date, the organization ceases earning new exposures.
2. The organization is not responsible for events occurring beyond that point in time.
3. The organization is responsible for events occurring prior to that point in time, even if made aware of them after that date.
4. "Runoff", as used below, reflects this situation: the organization is settling liabilities previously incurred and not incurring new obligations. This term is not used to imply a "fire-sale" of liabilities, "discounting" or any other term related to an insurance insolvency.

With this backdrop, it can be seen that the reserving mindset is focused on the ultimate answer when all uncertainties and contingencies have emerged (for losses, all claims are closed). As time passes the financial uncertainties of which reserving is concerned will move, to an ever larger degree, from estimate to actual. The reserving exercise is an attempt to determine the ultimate values at point where uncertainty remains.

It is important to establish that a valid methodology for reserving "Adjusting & Other" loss related expenses should explicitly recognize that these reserves are for expenses which are second-order in relation to underlying losses. Stated another way, unless we have a reported claim, a notice of loss or efforts expended in relation to a reported *potential* claim, there can be no claim handling expenses. First we have to have claims. Further, it is fundamentally intuitive that "adjusting & other" costs have a linear relationship to claim activity. The more claims being reported, the larger the claim function will need to be to handle the volume and vice-versa. This is embedded in the most widely used "adjusting & other" reserving method, the classical "paid-to-paid" method.

2.2 Destination: "A&O" Cost Per Unit of "Loss-Activity"

Total "A&O" expenditures in a given year are a known item available from accounting exhibits. What is needed, to make these expenses useful within the context of reserving, is an accurate proxy of what to contrast these costs with. As claim department salary is the vast majority of the "A&O" expense, the crucial task is finding a numerical proxy for the claim

department's use of their time. For this method, I have called this proxy "loss-activity". "Loss-Activity" is defined to be the sum of five components:

1) **Current Accident Year Paid + Case Reserve Reported Losses**: These are claims incurred and reported in the most recent accident year. For property claims, they will generally be reported and closed within the year and the reported value is a good representation of their value. For casualty claims, many of these will not be closed at the end of the year and will be subject to future revisions. In the context of financial reporting, an example would be the direct and assumed loss payments plus the direct and assumed case basis unpaid losses (Schedule P, Part 1) for Accident Year 2004 in the 2004 Annual Statement.

2) **Current Accident Year Paid Defense and Cost Containment (DCC)**: This is the DCC (formerly ALAE) component of newly reported claims; as no reserves are established at the case level for this component, paid data suffices. If the claim practice was to establish case reserves for DCC, they should be included here. In the context of financial reporting, an example would be the direct and assumed defense and cost containment payments (Schedule P, Part 1) for Accident Year 2004 in the 2004 Annual Statement.

3) **Prior Accident Years' Reported Losses**: This represents the reporting of lagged IBNR claims or adjustment in value of claims reported in previous years. Note: as with component 2, we would also want to include DCC changes if case reserves were present for that component. In the context of financial reporting, the approach would be similar to that for component (1); only we are looking for the change in paid losses + case reserves for 2003 and prior accident years from the 2003 Annual Statement to the 2004 Annual Statement.

4) **Prior Accident Years' Paid Losses**: This represents the payment in the current calendar year on claims which are from prior accident years which have not yet closed or in some cases had not yet been reported. In the context of financial reporting, the approach would be similar to that for component (3); only we are looking for the change in paid losses for the 2003 and prior accident years from the 2003 Annual Statement to the 2004 Annual Statement.

5) **Prior Accident Years' Paid Defense and Cost Containment**: This represents the payment of DCC on claims which are from prior accident years and have not yet closed. In the context of financial reporting, the approach would be similar to that for component (3);

only we are looking for the change in paid DCC for the 2003 and prior accident years from the 2003 Annual Statement to the 2004 Annual Statement.

While an initial look at these components leaves one wondering as to the reason for what appears to be an artificial summation of data, further consideration using first principles will reveal that these are an excellent proxy for all of the activity of a claim department within a given year. It should be noted that all loss and expense components are included gross of salvage, subrogation and reinsurance recoveries.

2.3 Application

The next step is to relate the total claim handling expense in a year to the total "loss-activity" and thus get a ratio which tells us the "A&O" cost per unit of activity.

$$"A\ \&\ O"\ Cost\ Ratio = \frac{Total\ "A\ \&\ O"\ Expenses}{Total\ "Loss - Activity"}$$

To derive the indicated "A&O" reserve, we multiply the Cost Ratio times the anticipated future "loss-activity". Revisiting the definition of "loss-activity", we see that in a prospective look the first two components fall away.

1) Current Accident Year Reported Losses = 0
2) Current Accident Year Paid Defense and Cost Containment = 0
3) **Total Unreported Losses**
4) **Total Unpaid Losses**
5) **Total Unpaid Defense and Cost Containment**

For purposes of reserving, we no longer have losses occurring; all losses have occurred and what remains is the reporting of IBNR claims and the settling of claims which have and have note been reported. Thus, components (1) and (2) are zero. Component (3) is equal to the calculated ultimate losses less the paid + case reserve losses already reported; component (3) includes pure IBNR claims and development on reported claims. The fourth component is equal to the calculated ultimate losses less paid to date losses, which includes all pure IBNR

claims and the settling of claims which have been reported. Component (5) is the calculated ultimate DCC less the paid to date DCC. Collectively, components (3) + (4) + (5) are the anticipated future "Loss-Activity". The A&O reserve is the product of the future "Loss-Activity" and the calculated Cost Ratio:

"A&O" Reserve = Cost Ratio * Anticipated "Loss-Activity"

3. APPLICATION OF THE METHOD

I now present this method applied to the loss experience of a medium sized insurance company writing a mix of property and casualty coverages across both commercial and personal lines. As indicated, all numbers can be easily located within an actuary's reserving work papers or a company's Schedule P data.

Historical Loss Activity ($ Millions) All Data Gross of Salvage and Subrogation						
Calendar Year	Current AY Reported Losses (1)	Current AY DCC Paid (2)	Prior AYs Losses Reported (3)	Prior AYs Losses Paid (4)	Prior AYs DCC Paid (5)	Total "Loss Activity" 1+2+3+4+5
2000	207.3	0.8	16.1	74.9	7.4	306.5
2001	241.6	1.9	32.4	106.2	8.1	390.2
2002	225.1	1.6	36.1	105.3	10.9	379.0
2003	244.4	2.0	53.7	118.8	14.3	433.2
2004	281.6	2.1	33.2	120.1	19.1	456.1

All of the "Loss-Activity" components suggest an organization which is growing, which is indeed the case. To pull these numbers from actuarial reserving work papers, the simplest method is to take the difference of the two most recent diagonals in the loss triangles. For reported losses, the most recent accident year is allocated to column (1), and the remainder of the incremental diagonal to column (3). For paid losses, the most recent accident year is disregarded and the remainder of the incremental diagonal is in column (4). For paid DCC, the most recent accident year is in column (2) and the remainder of the incremental diagonal is in column (5).

Historical "Adjusting & Other" Cost Ratios			
Year	"Adjusting & Other" Paid ($M)	Total "Loss Activity" ($M)	Cost Ratio
2000	17.68	306.5	5.8%
2001	18.69	390.2	4.8
2002	21.32	379.0	5.6
2003	24.93	433.2	5.8
2004	26.16	456.1	5.7

The 2001 cost ratio is clearly an exceptional value. Upon closer inspection, this is largely due to the presence of significant property-catastrophe losses (see the "Current AY Losses Reported" column). These losses are present in the denominator of the Cost Ratio calculation and serve to lower the indicated ratio. This relationship (between "adjusting & other" costs and shock losses in a calendar year) is a distortion to this reserving exercise. Thus, it is preferable to remove the effect of these events from both the losses and the "adjusting & other" expenses. If data is not available to remove the impact of the shock loss event, data points containing significant property catastrophe or other aberrational losses should be given diminished (or even zero) credibility when selecting a final Cost Ratio. For purposes of this demonstration, property-catastrophe losses have been excluded from the calculation of total "loss-activity".

Historical Cost Ratios (Adjusted for CY 'Shock' Loss Activity)			
Year	"A&O" Paid	Adjusted "LOSS ACTIVITY"	"A&O" Cost Ratio
2000	17.22	298.5	5.8%
2001	18.49	344.6	5.3
2002	21.32	379.0	5.6
2003	24.93	433.2	5.8
2004	26.16	456.1	5.7

If the method and proxies are valid, we would expect to find a "per-unit" cost that is not trending upward or downward in any material way, as is the case with this approach. Using a

straight average of the five data points, we have a cost of $0.0564 per $1.00 of "loss-activity". With our Cost Ratio in hand, we next need to calculate the amount of anticipated future "loss-activity" in order to produce an indicated "A&O" reserve. The future loss activity is easily attained from the reserving work papers. As noted, the first two components of "loss-activity" are zero since the reserving exercise is not concerned with obligations incurred in the future.

1) Current Accident Year Reported Losses = 0

2) Current Accident Year Paid Defense and Cost Containment = 0

3) Total Unreported Losses = Ultimate Losses - Paid-to-Date Losses - Case Reserve Losses = $100.0 M

4) Total Unpaid Losses = Ultimate Losses – Paid-to-Date Losses = $438.0 M

5) Total Unpaid Defense and Cost Containment = Ultimate DCC – Paid to Date DCC = $69.5 M

As noted above, if the company's practice is to establish case reserves for DCC expenses, then the DCC component would be handled identical to losses. For the company in the example, case reserves for DCC are not established. Adding up the components, there is 100 + 438 + 69.5 = 607.5 M in future "loss-activity". This is larger than the company's carried reserves, due to the inclusion of both unreported and unpaid losses. The product of this anticipated future "loss-activity" and the Cost Ratio is the indicated reserve under this method:

Future "Loss-Activity" X Cost Ratio = 607,500,000 X 5.64% = 34,263,000

3.1 Apparent Difficulties Using the "Loss-Activity" Approach

3.1.1 Inclusion of both *reported* and *paid* losses for the older accident years.

Certainly there may be some losses in both buckets, but for claims which are still open after a year this is arguably very appropriate. These claims may litigate and settle in a future year after the reserve is established. This requires claim staff resources. Thus if we only use reported losses we would be blind to this activity unless the established reserve was to change. Additionally, if we did not use *reported losses* we would not reflect the establishment of IBNR claims, which is very material to the casualty lines of business. For these reasons, the method uses both paid and reported losses, consistent with the reasoning presented by John Kittel in his 1986 paper. Shifting from a "going-concern" mindset to a "runoff" mindset

makes it apparent that establishment of the case reserve and the payout on that reserve are both activities which require claim department staff to effect.

3.1.2 Validity of the marginal cost applied prospectively.

It could be argued that the newly reported claims represent a disproportionate cost in the denominator of the Cost Ratio calculation. The argument is an implicit question as to whether the Cost Ratio on "small" claims which open and close in a short time frame is the same as the Cost Ratio on large claims that are open longer. I do not think there is a material distortion - if for no other reason than a significant portion of claim department time in a given year is spent disposing of a high volume of newly reported claims. Thus, it is not unreasonable to suggest that even if the nominal "adjusting & other" dollars per claim is drastically different, the cost relative to claim value (Cost Ratio) is still reasonable for both. It is sensible to argue that bigger claims are going to naturally involve more adjuster time, along with other A & O costs. But the sheer magnitude of the claim value will cause this method to post A & O reserves accordingly. Additionally, it must be pointed out that the logic behind this question breaks apart as you move farther away from an average claim value (in either direction) and actually could be thus interpreted to suggest the opposite.

3.1.3 Properly handling inflationary influences.

We point out that both the numerator and the denominator of the Cost Ratio are subject to inflationary pressures, so there is a degree of "canceling out" which makes gives the ratio a degree of immunity from this type of distortion. Over time, it may be argued, the inflationary pressures on losses are stronger than the inflationary pressures on adjuster salaries and other A&O costs. This may be true, but it disregards efficiency gains due to technology and training. If this was an issue, over time it would serve to be pulling the Cost Ratio downward and with the historical data analyzed in developing this method, this has not been the case.

3.2 Other Methodologies

3.2.2 Paid-to-Paid Method Comparison

The most widely used method in Property-Casualty actuarial practice for establishing A&O reserves is the so-called "paid-to-paid" method. It involves comparing paid A&O expenses to paid losses for the same calendar year. This ratio is then applied to the unpaid losses to determine the needed A&O reserve. Generally there is a significant adjustment necessary to reflect the fact that some of the "A&O" expenses on open claims has already been borne in the establishment of the case reserves. Thus, an assumption of what percentage of the "A&O" cost is incurred at opening of the claim is needed. The full paid-to-paid ratio is applied to true IBNR, and the paid-to-paid ratio times the adjustment factor is applied to the case reserves. This is problematic, and widely known to be so. For reasons of contradistinction and not novelty, I point out:

1. The denominator of the paid-to-paid ratio (paid losses) is a rough proxy for claim department activity. As we isolate scenarios involving operational changes this method of quantifying claim department activity breaks down. For example, in strong growth scenarios, the paid losses increase slowly whereas the paid A&O grows generally in line with the earned exposures, thus increasing the ratio. The artificially high ratio is then applied to the unpaid losses, which are a correct representation of financial reality - including the exposure growth. Without correction, this will lead to an overstated A&O reserve. There are other distortions to which the paid loss denominator is susceptible such as making no recognition for the effort expended on older claims unless a payment is made. This is material for casualty lines of business. The denominator of the Cost Ratio is five components which touch on claim department activity. Paid losses is one of these, but handling IBNR claims, paying ALAE and the case reserves for the current accident year reported losses are also a part. Looking at scenarios involving operational change this method of quantifying claim department activity holds up better. Using the same example, in strong growth scenarios, the current accident year reported losses (a dominant piece of the denominator) increase in line with the exposure growth, consistent with the change in A&O paid.
2. The "percentage paid at open" adjustment factor is not at this time, to my knowledge, prospectively quantifiable with any scientific method. A look at the compliment of this ratio ("percentage *not* paid at open") more quickly leads one to the conclusion that this cannot be quantified with any precision. To do so would involve more than just a collection of motion studies. With these drawbacks in mind, it is seen to be a highly

suspect component of the method, which effectively (and arbitrarily) reduces the paid-to-paid ratio in order to apply it to case reserves where some A&O expense has already been expended. This drawback can result in significantly distorted A&O reserve indications. Traditional usage has gone with the 50/50 rule: 50% "A&O" incurred at open, 50% at closed. This is clearly violated by partial payment lines such as workers compensation and lines involving tremendous litigation such as General Liability. The "loss-activity-method" does not involve speculation about the amount of A&O cost incurred when the claim was opened. This is because the future "loss-activity", to which the Cost Ratio is applied, includes (1) unreported losses, (2) unpaid losses and (3) unpaid Defense and Cost Containment. This acknowledges, and implicitly assumes, that the dominant A&O cost (claim department salary) has a fairly constant marginal cost. Indeed this can be seen from first principles; claim department time has a (relatively) fixed cost since as a functional unit it is a collection of salaried professionals. These three buckets do well quantifying future needs of claim department time to establish reserves on unreported claims as they come in, adjust the claim values as situations warrant and payout all unpaid loss and DCC reserves. Taking a close algebraic look at the "loss-activity" method, the 50/50 proportion can be found present in the handling of the IBNR segment. We note that this is because the Cost Ratio is applied to both the "unreported" and the "unpaid" losses, which for the "pure" IBNR component are identical. But the two methods are working in opposite directions. For the traditional method, the paid-to-paid ratio is multiplied by 50% and applied to the case reserves. This implies many things, but the most obvious is that the current calendar year claim activity was involved with new claims half the time. In a steady state, this may be generally valid, but outside of stable parameters, it is problematic. The "loss-activity" method allows the data to specify the weighting as the data emerges.

3. Beyond the difficulty with quantifying the "percentage paid at open", a change in case reserve adequacy poses further challenges to the classic approach. It is crucial because the method assumes the case reserves are a good representation of the effort already expended to investigate and establish reserves on reported claims. When faced with shifting case reserve adequacy, it is necessary to "lift the hood" on the method. But where? Infusion of an adjustment becomes very arbitrary, both in terms of technique and of calibration. Further, it will compound the difficulties highlighted above for assuming a percentage paid at open. Changes in case reserve adequacy are a

comparatively minor issue for the "loss-activity" method. The method assumes the overall loss reserving exercise has correctly detected the change in adequacy and thus the ultimate losses (and the corresponding unpaid losses) are correct. It is acknowledged that in terms of the denominator of the "A&O" Cost Ratio, the current year reported losses, and reported losses from prior years would be affected by a change in case reserve adequacy. But this change is partially self-correcting as claim department time is involved in re-evaluating case reserves previously established and the future "loss-activity" against which the Cost Ratio is applied is diminished (assuming the ultimate losses are correct). The paid component of "loss-activity" is entirely unaffected. This means the Cost Ratio enjoys a degree of immunity to changes in case reserve adequacy. In other words, if the ultimate losses are correct at the outset, the method will generally roll with the punches successfully.

3.2.3 Johnson Method Comparison

Another technique used in actuarial practice is the method expounded by Wendy Johnson. Her method uses a numerical proxy for claim department activity which is philosophically similar to the approach of the "loss-activity" method. The "weighted number of open claims" is the number of older claims open at the beginning of the year along with the number of claims reported during the year

1. The Johnson method's marginal cost must be trended forward, since it is a cost per *open claim,* which places reliance on a trend factor. We note that the forces appearing as "trend" in the curve fit to the marginal cost for each year are beyond traditional inflationary effects and not necessarily the same in the event of runoff, as discussed above in looking at the proper mindset for reserving. The "loss-activity" method assumes the reserving exercise has properly estimated ultimate losses and thus trending of the Cost Ratio is not warranted.

2. I also note that in application, the number of claims reported during the current year will be the vast majority. Thus, unless working with a severely protracted line of insurance (such as her example with medical malpractice), the year end pending claim counts will receive very little weight. This is further bolstered when looking at the distribution of paid losses. For companies with significant casualty portfolios, the current calendar year paid losses will have a large percentage of payouts from prior years' claims.

3.2.4 Kittel Method Comparison

The last technique I will look at is the method developed by John Kittel. His method is a variant on the paid-to-paid method. In his paper, he acknowledges many theoretical difficulties with the paid-to-paid approach, and concentrates on the flaws with paid losses as the proxy. He proposes replacing this with an average of reported losses and paid losses, particularly in instances where the organization is growing.

As it is a subtle variant of the paid-to-paid approach, my criticisms of the main method apply as well with one limited exception. The Kittel method will be more "accurate" than the paid-to-paid method in certain scenarios such as strong growth or intensive inflation, where the accruing unpaid liabilities exceed the movement in paid losses.

4. CONCLUSIONS

I have a presented a new method for calculating "adjusting & other" loss expense reserves. The method is technically sound and simple to calculate, and it is hoped that it will find a place in the reserving actuary's methods for this reserving task.

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Abbreviations and notations
A&O, Adjusting & Other Expense (ULAE)
IBNR, Incurred But Not Reported
DCC, Defense and Cost Containment Expense

Biography of the Author

Paul Deemer is the Chief Actuary of North Pointe Holdings, Inc. in Southfield, Michigan. His responsibilities include reserving, financial modeling and actuarial research initiatives. He has a degree in Actuarial Science and Economics from Eastern Michigan University. He is a Fellow of the CAS and a Member of the American Academy of Actuaries. He participates on the CAS examination committee.