TITLE: UNALLOCATED LOSS ADJUSTMENT EXPENSE RESERVES IN AN INFLATIONARY ECONOMIC ENVIROMENT

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UNALLOCATED LOSS ADJUSTMENT EXPENSE RESERVES IN AN INFLATIONARY ECONOMIC ENVIRONMENT

Unallocated Loss Adjustment Expense seems to have received little attention in the actuarial literature. When the subject is discussed in "actuarial" circles, often, the prevailing attitude is that this item is too small compared with loss reserves or allocated loss adjustment expense reserves to be worth much effort. At best, any estimate can be only as good as loss reserves, and little can be done to improve the simple paid to paid ratio methods.

However, the unallocated loss adjustment expense reserve in most companies is generally one of the largest expense reserves carried, second only to allocated loss adjustment expense or contingent commission reserves.

The best rebuttal concerning the dependence of loss adjustment expense reserves on loss reserves is that there is little logic in compounding one's errors.

What follows is a review of the methods commonly used to calculate unallocated loss adjustment expense reserves and an analysis, based on Loss Department operation, which enables adjustment to changing factors in the business environment; such as, staffing changes, high interest rates, and inflation. An assumption made throughout this paper is that loss reserves are accurate and reflect inflationary influences on claim costs.

What is Unallocated Loss Adjustment Expense?

Loss adjustment expense, in total, consists of the following:

(A) Legal, etc. - Legal fees, costs of expert witnesses, police reports, engineering reports, Fire Marshall reports, etc.; all generally maintained on a claim file basis.

(B) Independents - Independent adjusters fees, which are usually maintained on a claim file basis.

(C) Field Adjusters - Loss Department field adjusters costs.

(D) Operations - Loss Department operational, management, clerical, and inside adjuster costs.

Ruth Salzmann,[1] in Property and Liability Insurance Accounting, David Skurnick,[2] in his Survey of Loss Reserving Methods, and the National Association of Independent Insurers stat plan define allocated loss adjustment expenses as those identified by claim file in company records, or Legal and Independents, as above. Unallocated, hence, consists of Field Adjusters and Operations.

E. F. Petz,[3] in Testing and Evaluating Loss Expense Reserves, and the Insurance Services Office, in its stat plan, group Independents, Field Adjusters, and Operations as unallocated expense.

Who is right?

The answer is that it does not matter. The key to calculating an accurate expense reserve is understanding the way in which the

[1]Ruth E. Salzmann, "Estimated Liabilities for Losses and Loss Adjustment Expenses," in Property-Liability Insurance Accounting, ed. Robert W. Strain, 1974, p. 47

[2]David Skurnick, "A Survey of Loss Reserving Methods," in Proceedings of the Casualty Actuarial Society, 1974, p. 16

[3]E. F. Petz, "Testing and Evaluating Loss Expense Reserves," in Proceedings of the Insurance Accounting Statistical Association, 1974, p. 693

components of the expense are incurred and the timing of the corresponding expense payments so these components can be combined into homogeneous groups.

The purpose for which the reserve is being calculated is also an important consideration. In expense reserving, assumptions must be made about the conditions that will exist when future services are provided. A loss expense reserve should provide for the ultimate expense required to settle outstanding claims as of the reserve date. Whether the purpose of the reserve is ratemaking or management information, the assumption can be made that loss settlement will be provided according to the company's business plan. When generating a reserve for a statutory financial statement, certain statutory guidelines may have to be followed; such as, the prescribed allocation of paid unallocated loss adjustment expense to accident year in Schedule P. If a reserve is calculated to evaluate a potential insolvency, one should assume that independent adjusters and industry support groups would be used in place of company staff.

As a framework for analysis, the four loss expense groups; Legal, Independents, Field Adjusters, and Operations; will be reviewed separately for one company.

Before starting this analysis, a review of the methods most commonly used to calculate unallocated loss adjustment expense reserves is germane. The key point is that each method is an outgrowth of assumptions about which expenses will be paid and the timing of the payments. Each method has the objective of calculating a total reserve and allocating it to accident year.

(1) Transaction Based Method

This method is based on allocating costs to each major Claim Department transaction (closing, single payment, new claims, etc.) and maintaining a record of occurrence for these transactions. The average cost for each type of transaction, inflation adjusted, is multiplied by the numbers of each type of transaction required to close the open claim file to yield a reserve. The average cost is determined by time study, and the variance of the average cost may be quite high. The numbers of each type of transaction required to close the open claim file is estimated by using past history.

This method yields a very accurate reserve but, generally, requires a great deal of work. The Brian Method is an example of this. A detailed review of this method is presented in Skurnick[4] and, so, will not be repeated here.

(2) Methods Which Apply a Percentage to An Average Years Paid Unallocated Loss Adjustment Expense to Yield a Reserve

A study of calendar year paid unallocated loss adjustment expense, which distributes it to accident year, is used to determine the portion remaining unpaid for current and prior accident years. This proportion is applied to paid expenses to yield the reserve. An alternate approach is to calculate the percentage from some prescribed allocation of unallocated loss adjustment expense to accident year.

[4]Skurnick, op. cit.

For example:

In 1970, Annual Statement Schedule P distributed Workers Compensation paid ULAE to accident year as follows -

1970	-	Current Accident Year	40%
1969	-	First Prior	45%
1968	-	Second Prior	10%
1967	-	Third Prior	5%

It is assumed that this distribution was the result of a time study and can be used to calculate the percentage of an average years expense to set up as the reserve.

As of 12/31/70, paid and unpaid ULAE for each accident year are distributed as follows -

Accident Year	% ULAE Paid	% Unpaid
1970	40 = 40	45 + 10 + 5 = 60
1969	40 + 45 = 85	10 + 5 = 15
1968	40 + 45 + 10 = 95	5 = 5
1967	40 + 45 + 10 + 5 = 100	0 = 0
		Total 80

At the end of calendar year 1970, the total ULAE remaining unpaid, according to our assumptions, is 80% of an average year's ULAE.

This method does not allow for growth, changes in claim frequency, or inflation in expense costs unless adjustments are applied to the historic paid unallocated loss adjustment expense used as a base. A more thorough review of this method is

presented in Skurnick.[5]

(3) Methods Which Use the Ratio of Calendar Year Paid Unallocated Expense to Calendar Year Paid Losses as a Starting Point

An average paid expense to paid loss ratio for several years or, if stable, the ratio for the current year is calculated. Then, an estimate is made to determine the percentage of unallocated expense remaining unpaid on open claims which are recorded on the company's books. Generally, the assumption is made that fifty percent of the unallocated loss adjustment expense occurs when the claim is reported and fifty percent when it is closed. E. F. Petz,[6] in his article Testing and Evaluating Loss Expense Reserves, indicated that he conducted a time study at his company which supports this assumption. Fifty percent of the paid to paid ratio is applied to the reserve for known claims, since half the unallocated work is already completed on known claims, and one hundred percent of the ratio is applied to the IBNR reserve. (Estimated percentage of work at closing X ratio X reserve for known claims + [ratio X IBNR reserve] = ULAE reserve) The reserve is distributed to accident year in proportion to the loss reserve. Hence, it is assumed that the age of the claim does not effect the ratio of paid unallocated loss adjustment expenses to losses and that unallocated loss adjustment expenses and losses are paid at the same time and rate.

This method does include an inflation adjustment to the degree that loss reserves take inflation into account. If claim settlement

[5]Skurnick, op. cit.
[6]Petz, op. cit.

costs inflate at the same rate as loss costs inflation is accounted for.

Why is the Calendar Year Paid to Paid Ratio used as a starting point?

The concept upon which this method is based is to relate the paid unallocated loss adjustment expense cost to the work completed by the Loss Department measured in dollars of claim. Calendar year paid losses are used to represent the dollars of losses worked on by the Loss Department. There is an inconsistency here. The Loss Department, unfortunately, doesn't just close claims. It also opens them. Paid losses don't accurately represent the work done by the Loss Department since they do not take into account claims opened during the year which remain open at year end. This can be significant when loss reserves vary from year to year. A growing line with rapidly inflating loss costs could easily have loss reserves increasing at thirty to forty percent a year.

If we use the 50/50 assumption and ignore partial payments, the loss dollars processed with the calendar year paid unallocated loss adjustment expense are:

½ unit of work X payments on prior outstanding reserves

1 complete unit X losses opened and paid during the year

½ unit X losses opened remaining open

The ratio of calendar year paid unallocated loss adjustment expense to the dollars of loss as represented above should be used as a more accurate starting point.

If reserves are accurate, calendar year incurred = accident year incurred = losses opened and paid + opened remaining open.

So,

Calendar paid = opened and paid + paid on prior outstanding reserves

Calendar incurred = opened and paid + opened remaining opened

½(calendar paid + incurred) = Losses opened and paid
+ ½ payments on prior outstanding
+ ½ losses opened remaining open

the desired quantity.

If we use the ratio of paid unallocated loss adjustment expense to ½(paid + incurred losses) as our starting point and incurred is greater than paid, it will yield a lower ratio and a lower more accurate reserve. It still accounts for inflation to the same extent the loss reserve accounts for inflation. This can be adjusted as necessary.

Example:

DATA

a)	1980 Paid Losses	=	6,000	
b)	1980 Total Loss Reserves	=	10,000	
c)	1979 Total Loss Reserves	=	7,000	
d)	1980 Incurred Loss	=	9,000	(a + b - c)
i)	1980 IBNR Reserve	=	1,000	(included in b)
u)	1980 Paid U.L.A.E.	=	200	

CALCULATION

v) Paid ULAE ÷ Paid Losses = .033 (u ÷ a)

w) Paid ULAE ÷ ½(paid + inc. loss) = .027 (u ÷ $\overline{a}$ + $\underline{d}$)

Paid to Paid Reserve = ½ X .033 X 9,000 + .033 X 1,000 = 182
($\overline{½}$ X v X $\underline{d}$ + $\overline{v}$ X $\underline{i}$)

Pd to ½(pd + inc) Reserve = ½ X .027 X 9,000 + .027 X 1,000 = 149
($\overline{½}$ X w X $\underline{d}$ + $\overline{w}$ X $\underline{i}$)

Unfortunately, the assumptions that unallocated loss adjustment expenses are independent of age of claim and that unallocated loss adjustment expenses and losses are paid at the same time and rate are not always true.

A loss adjustment expense analysis based on a simple review of Claim Department operations and practices at Middlesize Mutual Insurance Company for both Property and Casualty lines is outlined as follows:

I. Property Insurance

A) Characteristics

1) Legal, etc.

Expenses include examination under oath for suspicious claims, private investigators reports, arson legal, police reports, engineering reports, Fire Marshall reports, legal for suits against the company, etc.

a) Occurrence - Most of these expenses are incurred in the first few months of the life of a claim, perhaps with the exception of arson legal and company suit expenses.

b) Payment - Usually, legal expenses are paid four to six months after occurrence.

c) Magnitude - Their magnitude is relatively small compared to other types of expenses. Report year data confirms that these expenses are small and are paid predominantly in the first report year.

2) Independent Adjusters

a) Occurrence - After a claim is reported to the company, selected claims, due to geography, work

load, etc., are assigned to independents.

b) Payment - This company's general agreement with these firms allows for little or no interim billing; so, billing and payments follow the claims closing by about two months.

c) Magnitude - Independent adjusters expenses are quite significant and bound to vary from company to company and within company from year to year. It is very important to ascertain how claim department management will handle work load. Will proportionally more or less claims be assigned to independents to settle the open claim file than have been in the past?

3) Field Adjusters

a) Occurrence - Their work is concentrated in a one to two month period at some time in the first four to six months the claim is open. Separate adjusters are used for property and casualty claims.

b) Payment - These expenses are paid as they are incurred.

c) Magnitude - For each claim, their magnitude is comparable to independents; hopefully, it is less costly to use a field adjuster than an independent on equivalent claims.

4) Operations

a) Occurrence - These expenses follow the assumption that one-half the work occurs when the claim is

booked and one-half when it is paid.

b) Payment - Payment of these expenses corresponds with occurrence.

c) Magnitude - Operational expenses are reasonably stable from year to year. They are effected by volume and inflation in costs.

B) Reserving

1) Legal, etc.

Due to the small size and sporadic occurrence, it is practical to group legal expenses with Independent Adjusters, despite the fact that property legal usually occurs early in the life of the claim. One justification for this is that payment is delayed for four to six months, and for many property claims, this would be near or after closing.

2) Independent Adjusters

Since the timing of expense payments follows closely the timing of loss payments, any appropriate allocated reserve method will suffice; e.g., latest year paid expenses ÷ paid losses X loss reserves = expense reserves. If there are interim payments to adjusting firms, a method must be used which calculates the ultimate incurred expense by accident year and subtracts paid to date to get the reserve. This type of method is independent of the timing of payments. The first allocated method present by Ruth Salzmann,[7] in Property and Liability Insurance Accounting, provides an example

[7]Salzmann, op. cit.

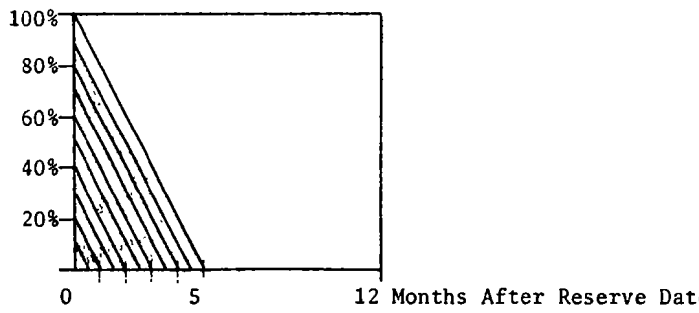
of this. Since all these methods involve using some historic relationship between paid expenses and paid losses, it is important to adjust for changes in the usage of independent adjusters. A catastrophe or difference in management philosophy could cause the percentage of claims in the open claim file assigned to independents to be quite different from the percentage previously assigned to independents. Middlesize Mutual maintains separate data for losses assigned to independents and, so, can base this reserve directly on loss reserves assigned to independents and the paid to paid ratio for losses assigned to independents. Most Claim Departments maintain some internal record of the number of assignments to independents, and this can be used to test the degree of stability in the percentage of claims assigned to independents. Changes in this percentage could then be used to adjust the reserve.

3) Field Adjusters

The characteristics of these expenses are quite different from operations. Most of the work at Middlesize Mutual occurs after the claim file is opened but substantially before it is closed. Using the traditional paid to paid ratio method could never yield an appropriate reserve because the timing of occurrence of the expense is not directly related to when the claim is opened or closed. Staffing changes, growth, and inflation must also be accounted for. At

the point in time for which this reserve is generated, most of the open claim files which field adjusters will handle have already been assigned to them. So, if we work with the latest level of field adjusters costs annualized, it will accurately reflect the cost of those personnel who are working on these open claims during the next four to six months (average five months). Then, if it is assumed that the period of greatest effort on each claim occurs at some random time in the first five months of the claims life, the work on the open claim file as an aggregate can be considered to be evenly distributed over the first five months each claim is open. The last assumption is that these open claims were reported evenly over the past five months. This yields the following distribution of work on the open claim file.

% of Field Adjuster Cost Spent on Open Claim File as of Reserve Date



The shaded triangle represents the portion of the next years work which the current field adjusters

will spend working on the open claim file. This is about twenty-one percent. For our reserve, we can use twenty-one percent of the annualized cost of the current field staff. This result accounts for staffing changes and growth because it uses the cost of the personnel who will do the work. A small factor for wage increases in the five month period could be applied but is relatively insignificant.

4) Operations

The unallocated paid expense to one-half (paid + incurred) loss ratio method presented earlier in this paper is appropriate.

II. Casualty

A) Characteristics

1) Legal, etc.

a) Payment and b) Occurrence - Many legal fees are billed upon closing of the claim file. High interest rates and inflation have caused some firms to resort to regular quarterly or semi-annual billing.

c) Magnitude - Their magnitude is very significant and varies with the age of the claim.

2) Independents

a) Occurrence - A substantial proportion of the work completed by independents, approximately one-half, is completed in the first few months of the claims life. After this, about one-quarter is spread throughout its life and one-quarter near closing.

When a claim either closes or goes to suit, most of the work is complete. Only minor involvement is necessary for claims in suit.

b) Payment - Regular quarterly or six month billing by independents predominates.

c) Magnitude - The magnitude of independent adjuster expenses is smaller than legal, yet quite significant. They usually increase with the age of the claim. They vary with the number of claims assigned.

3) Field Adjusters

These expenses are similar to independent adjusters, except costs are paid continuously.

4) Operations

Operational costs are similar to those for property claims, except that there is a cost due to the persistance of open files on the company's books.

B) Reserving

1) Legal and 2) Independents

An allocated reserving method, which develops an ultimate accident year incurred expense and subtracts payments to date, is necessary because the pattern of payments does not correspond to loss payments. The Slifka method, as presented by D. Skurnick,[8] or the Ultimate Incurred Method presented by R. Salzmann,[9] are such methods. If independents and staff are reserved separately, the change in mix must be

[8]Skurnick, op. cit.
[9]Salzmann, op. cit.

considered as in property lines.

3] Field Adjusters and 4) Operations

If the work by staff adjusters during the life of the claim and the operational work of maintaining the open claim file can be considered insignificant, then the method which uses the ratio of paid expense to one-half (paid + incurred) loss times loss reserves will suffice.

At Middlesize Mutual, one-half of the work on a claim file is expended near its opening, one-quarter is spread throughout its life, and one-quarter is expended near closing. The easiest way to handle this is to allocate paid expenses for Field Adjusters and Operations to accident year. Once this is done, a method which projects the ultimate accident year incurred expense and subtracts paid expenses to date can be used to calculate a reserve. Since Field Adjusters, Operations, Indepdendents, and Legal are paid in a similar manner, the paid expenses for each could be distributed to accident year and an ultimate incurred calculated for the combined total.

Paid expense can be distributed to accident year in proportion to the following quantity:

Opening factor X calendar year incurred by accident year (The opening factor is determined by time study to reflect work on claims being opened)

Plus closing factor X paid losses by accident year (The closing factor is determined by time study to reflect work on closings)

Plus open factor X mean loss reserves by accident year (The open factor is determined by time study to reflect the work maintaining the open claim file)

This necessitates conducting a time study to determine the three factors. At Middlesize Mutual, the opening factor is estimated as fifty percent. The paid factor is estimated as thirty-five percent. The open factor is estimated as fifteen percent. The reason the open factor is fifteen percent is because it represents about one-quarter of the field adjusters costs, but, by separate study, only five percent of operations, and field adjusters costs and operations are almost equal in magnitude; so, ½(25% + 5%) = 15%.

This method has the following advantages:

1. It accounts for work on open files in a systematic manner.
2. It is somewhat self-adjusting since, if claims remain open for longer periods due to social trends, etc., or, if the factors are incorrect, the ultimate expense reflects this.
3. It is inflation sensitive because it's based on a projection of ultimate costs.
4. It adjusts for IBNR claims because of the proportion of expenses allocated to calendar year incurred by accident year.
5. It reduces the effects of changes in work handled

by independent and staff adjusters.

6. It allows for calculation of a casualty loss expense reserve using one method for both allocated and unallocated items.

Its disadvantage is that it requires some work to determine the percentages to assign to each factor and the percent of loss expense to allocate to Casualty Field Adjusters and Operations. Standard expense accounting techniques can be used to accomplish this.

III. Special Considerations

A) Excess Reinsurance

Many companies maintain excess reinsurance contracts in force, which provide for recovery of both losses and allocated loss expenses. Frequently, their claims statistical systems do not distribute recoveries between losses and loss expenses. When both these conditions exist, loss adjustment expense reserves must be based on loss reserves prior to the deduction of excess reinsurance recoveries.

This would seem to yield an excessively large loss expense reserve, but, due to the mode of operation of the statistical system, it is appropriate. This type of stat system makes it impossible to recover loss expense; it causes all recoveries to be treated as loss recoveries. Hence, loss expense reserves must be calculated in a manner which reflects this. The result is that loss expense reserves are overstated and net loss reserves are understated, but

the total reserve is accurate. A reserving system which uses a developed ultimate incurred and subtracts paid to date would accomplish this with no special handling.

B) Loss Expense Loadings for Ratemaking

Company and bureau data are quite often combined for ratemaking purposes. When this is done, adjustments must be made for differences in definition of allocated and unallocated expense. Since the Insurance Services Office allocated loss adjustment expense data does not include independent adjusters costs, these costs must be included in an unallocated expense loading. The National Association of Independent Insurers data does include independents costs in allocated loss adjustment expense so some assumption must be made about how this quantity compares with particular company results. This is difficult because the magnitude of independent adjusters costs in the National Association of Independent Insurers data cannot be determined.

Use of a reserving method which calculates an ultimate incurred loss adjustment expense facilitates this type of analysis. Using the techniques presented in this paper, a separate ultimate incurred expense can be calulated for each of the major expense components discussed here (Legal, Independents, Field Adjusters, and Operations). This can be used to determine an ultimate incurred loss to incurred expense ratio for each component by accident year. By applying these ratios, ratemaking data from different sources can be easily adjusted to a common basis. Bureau data can be adjusted to account for all loss expenses by

applying the selected ratio to loss data for each loss expense component not included in the bureau data.

These same principles should also be applied when working with bureau expense reviews and bureau rates and adjusting for company expenses to estimate an appropriate deviation.

Conclusions:

It is not appropriate to prescribe a single method for the calculation of loss expense reserves. The current methods most frequently in use often do not take into account many major factors which influence these reserves. This paper has presented some examples of factors which are frequently overlooked along with some techniques which can be used to better account for these factors. An objective review of Loss Department function is necessary to determine which factors are significant.

Greater precision in estimating reserves cannot be achieved until each significant factor is incorporated into the reserving method.