DISCUSSION BY HUGH G. WHITE

I was very impressed by the quality of this paper by two men whose company's fortunes turn so heavily on the accuracy of the measurement of the Incurred But Not Reported Claim Reserve.

The authors define the IBNR Reserve in such a way as to embrace all changes in the reported incurred loss figures for an accident period from the date of current valuation to ultimate. Mr. Tarbell in his 1934 paper "Incurred But Not Reported Claim Reserve", *PCAS* Vol. XX 1934 considers as IBNR all unreported losses as of a given valuation date, including their development from first notice to ultimate. Presumably, although he does not seem to mention it in the paper, he would consider development on known cases to be a separate consideration.

My own personal preference is to segregate the Bornhuetter-Ferguson definition mentally into three segments: IBNR (unreported to the company at the branch level), "in transit", and supplemental (loss development) and to separate it practically into two parts, the first consisting of IBNR and "in transit" to the first notice level, and the second of supplemental on recorded claims whether they are reported as of the reserve date or not. In other words, development on an unreported claim from the first notice level is considered part of the same reserve component as future development on known cases as of the reserve date. This is an attempt to segregate the causes of non-instantaneous reporting of claim producing events, and their effects on reserve levels, from the causes of inaccurate first notices and their effects.

Complete combination into one component has psychological advantages since, when variations appear from time to time in the supplemental or IBNR "in transit" segments, it helps to spread it over a wider base. Nevertheless, it is helpful when a potential perturbation rears its head in the external world to know what portion and what proportion of your development factor is likely to be affected. Let us use the authors' example of a mail strike which, of course, affects primarily the "in transit" portions of the total bulk reserve. Suppose you are fortunate enough to write a line of insurance where your aggregate development factor on outstanding claims from any valuation date to ultimate is unity because you are closing without payment a reported claim for every one late reported. It would be difficult to try to account for the effects of three weeks without mail if you have not segregated your development factor into the two components of late reported and claims closed with no incurred amount.

Another advantage of the separation of the bulk reserve into at least two components is the availability of different bases for calculation of the reserve components. Premiums in force are a reasonable basis for calculation of IBNR and "in transit" claims, at least to the first notice level, and yet what could be more appropriate as a calculation basis for loss development, from the first notice level to ultimate, in a major line than the latest information on what is subject to it (i.e. case basis outstanding)?

What follows is in essence a series of marginal notes on specific points raised throughout the paper. As they begin the discussion of the loss development approach, the authors indicate that it is necessary that all loss and allocated loss expense data carry both accident date and original notification date. It would seem that the attachment of the notification date to the claim record would only be necessary if one expected different development patterns after first report on two groups of losses, one group reported three months after date of loss and another group reported four months after date of loss, and have a method of taking this difference into account in reserve calculation. It would seem sufficient, at least for primary insurers, to allow the data to establish its own notification date (and, of course, accident date), separately for a first report, or subsequent development on a claim as it is recorded on the company's records. If this is done monthly, it should adequately establish the pattern of first report and development of an accident month's incurred losses.

I certainly agree with the authors that expected loss should be used as a test of reasonableness of a reserve, but feel that, provided sufficient individual attention can be given to the results in a small or volatile line, its use to actually set the reserve for the line should be avoided as much as possible, since, by doing otherwise, you are specifically ignoring most of the information on which the reserve would normally be based. To illustrate some of the difficulties associated with expected losses, at least for myself, I offer the following problem. You are trying to establish the reserve for commercial automobile bodily injury and the reported proportion of expected losses as of statement date for the current accident year period is 8% higher than it should be. Do you:

1. Reduce the bulk reserve a corresponding amount (because you sense an acceleration in the rate of report);
2. Leave the bulk reserve at the same percentage level of expected losses (because you sense a random fluctuation such as a large

loss); or

3. Increase the bulk reserve in proportion to the increase of actual reported over expected reported (because you don't have 100% confidence in your "expected losses")?

Obviously, none of the three suggested "answers" is satisfactory without further extensive investigation, and yet, all are reasonable. While it is a gross over-simplification of the question the reserve actuary will face, it still illustrates the limitations of the effectiveness of expected losses.

An additional thorny problem raised in conjunction with the use of expected losses is the decision, which must be made separately for each company and for each line of insurance, as to what constitutes an "exceptionally large loss"; a portion of which should be excluded from the determination of the incurred but not reported reserve. Inclusion of the full amount of such an item may cause you to over-reserve, unless you are using the expected loss method, in which case it may cause you to under-reserve, but, of course, the exclusion of too much or too many will do the reverse.

In the section on "Interim Reserving Techniques", the authors point out the skewedness of the distribution of development, by quarter, throughout the year, both for the most recent accident year and for prior accident years. The figures indicated are 40%, 70%, 85% and 100%, by quarter, for the most recent accident year and 33%, 60%, 80% and 100% for prior accident years. Perhaps, as they point out, because the experience they are quoting is excess of loss and would have a much greater average time lag in reporting, their distributions are much less skewed than the distributions arising out of our company's experience in Canada. The distribution, by quarter, that we get for the most recent accident year is 80%, 90%, 95% and 100% and for prior accident years, 36%, 62%, 83% and 100%.

The authors mention the possible snowballing effect of an observed deterioration in a prior accident year which is allowed not only to affect the reserve for that year, but also to cause the recalculation of all subsequent accident year's reserves, based on the revised developmental indications for that year. One must be careful, in observing such a deterioration, to distinguish between a random deterioration and a definite indication of a basic flaw in the reserve structure. One does not want to be too light on one's feet in responding to an indication of either deterioration or

retarded development since, as the authors point out in one of their examples, the adjustment of one accident year's supplemental and IBNR reserve by $200,000 could carry with it the implication of an adjustment of over five times that amount.

Another suggestion, in the section on "Interim Reserve Techniques", is that the required alteration in a budgeted growth in the IBNR reserve, because of an increase in expected losses, could be achieved by multiplying the increment in expected losses by the current year's IBNR factor. If one admits that IBNR is an attempt to account for time lag in reporting, it would not seem sufficiently conservative to use the IBNR factor for a group of losses (reported or unreported), which are, on the average, six months old, to produce an incurred but not reported reserve increment by multiplying by a group of expected losses (reported and unreported), which could be as little as one and one half months old, if one uses quarterly interim reserves.

In their section on the fiscal-accident year approach, the authors point out that the suggested method is more expensive and more time consuming than the rougher estimates which are available without reference to both month and year of loss in all claim data. But, I believe, that there would be no question today that the cost associated with it is worthwhile. I believe, also, that there are no major primary insurers who do not use some variation on a fiscal-accident year approach for at least their major lines of insurance.

The amount of information available to most actuaries who are responsible for the establishment of supplemental and IBNR reserves is enormous and the computational techniques are myriad and sound. Nevertheless, enough judgment situations arise month by month in arriving at numbers which directly affect operating results that it is of extreme importance for the actuary to keep in as close touch as possible with all aspects of his company's operation in both branch and head offices, and particularly in the claim and data processing departments. While it is the duty of actuarial science to substitute some facts for some impressions, it is the duty of an actuary to prepare himself in such a way that he receives the correct impression from a set of facts. I believe that nowhere in the wide range of actuarial responsibilities is informed judgment called into greater play than in the establishment of supplemental and IBNR reserves. The authors of this paper deserve congratulations for pointing their colleagues toward sources of the necessary information.