DISCUSSION BY MARGARET WILKINSON TILLER

Mr. Guiahi's paper presents a model that is a good starting point for estimating the reserve associated with claims that have been incurred but are not reported. Since he refers only to "claim costs," it is not clear whether this reserve is for losses only, or losses and allocated loss adjustment expense. His technique can be applied to either or to allocated loss adjustment expenses only, provided that the model parameters are selected appropriately.

An important point to note is that the model does not produce an estimate of case reserve development, i.e., the difference between the ultimate value of claims and the total of the payments plus case reserves for claims that have been reported as of a given date. Again, the terms "value," "payments," and "case reserves" could refer to losses only, losses and allocated loss adjustment expenses, or allocated loss adjustment expenses only, as long as the definitions are consistent.

One of the main assumptions underlying Mr. Guiahi's model is that claim severity and report lag are independent. While this may be close to reality for a short-tailed line such as automobile property damage, it is probably not true for long-tailed lines such as medical malpractice and products liability. Mr. Guiahi points out that if there is empirical evidence that the assumptions are not valid, adjustments to the model must be made. He does not, however, explore what those adjustments are. For those lines of business in which claim severity and report lag are dependent or in which other model assumptions appear to be invalid the model can be used only as a starting point.

Mr. Guiahi states that his model overcomes many of the problems associated with retrospective reserve analysis (e.g., age-to-age factors derived from a loss development model). In particular: "A retrospective reserve analysis provides information with regard to the adequacy or inadequacy of prior reserve estimates, but its implications about the accuracy of a current reserve are questionable."

Any reserve analysis, including one based on Mr. Guiahi's model, assumes that the past is a good predictor of the future. Where known or suspected changes are taking place, a good actuary will modify the analysis techniques being used to reflect these changes as appropriate.

For example, if the number of claims and/or average claim size is increasing but the claim reporting pattern and the payment and case reserving practices have not changed, the loss development technique used on accident year reported losses to project ultimate losses for all incurred claims will not be affected by

these changes. In Mr. Guiahi's model to project ultimate losses for incurred but not reported claims, these changes must be explicitly recognized and the model parameters adjusted accordingly.

If the claim reporting pattern is changing, the development technique can be used separately on accident year claims and average claim size to project ultimate losses for all incurred claims. This allows the development factors for claims to be modified so that the estimated ultimate claims reflect the change in the claim reporting pattern. In Mr. Guiahi's model to project ultimate losses for incurred but not reported claims, this change must also be explicitly recognized and the model parameters adjusted accordingly.

In summary, Mr. Guiahi's model is a good starting point for estimating reserves for losses, losses and allocated loss adjustment expenses, and allocated loss adjustment expenses only associated with claims that have been incurred but are not reported. To be of practical value, the model's assumptions should be evaluated carefully in light of empirical data and appropriate changes made to the model if the assumptions appear to be invalid. In addition, the reserve for case development must be estimated in order for the reserve picture to be complete.