DISCUSSION BY PAUL J. SCHEEL

Mr. Cook's paper, "Trend and Loss Development Factors," is a welcome addition to the *Proceedings*. His paper treats many problems associated with trend and loss development factors, but I would like to confine my comments to the overlap question.

The concepts of loss development, trend and their relationship are difficult to understand and even more difficult to explain. The fact that some regulators still insist that there exists an overlap between loss development and trend is proof enough that the actuaries have not been able to explain it to the regulator's satisfaction. Perhaps Mr. Cook's paper and the reviews it has stimulated will go a long way in overcoming this past deficiency.

Automobile rate filings, by their very nature, are complicated documents. Thousands of man-hours have gone into thought and discussions of principles and procedures which are inherent in the ratemaking formula contained in the filing. Those who have prepared an automobile rate filing realize that certain techniques utilized are presumed to be accepted by the regulator. This is justified since some ratemaking techniques have survived the test of time. Therefore, one need not fully explain every step in the process each time a filing is prepared. When techniques are presented in the same manner over an extended period of time and go uncontested, it is more difficult to defend those techniques once they are contested. The overlap controversy is a perfect example. The current practice is to first apply the loss development factor to the immature accident year losses and then to apply the trend factor. The factors are successively applied.

The current procedure is a logical order in which to apply the two factors, as it is reasonable to say that immature accident year losses should first be adjusted to maturity before application of any trend factor. When the two factors are applied in this order it does "appear" to create an overlap. This apparent overlap can be easily resolved by reversing the order of application in one's thought process and therefore reversing the order of application in the rate filing.

Because the loss development factor has always been applied first, it is difficult to conceive of it being applied differently. But, isn't it equally as reasonable to say that immature accident year losses should first be placed at the loss level for the period of the new rates? That is, apply the trend

factor first. If this is done, the resulting answer is what we expect the losses to be which result from accidents written at the new rates, at the same level of maturity as our loss experience. Since these trended losses are immature we must rely on the past relationship of mature to immature losses to bring these losses to the proper level of maturity. The loss development factor picks up in time where the trend factor stops.

There is, therefore, no overlap.

Mr. Cook's exposition of the overlap question is quite clear and readily understandable to the layman. This section of his paper could be extracted and used as an appendix to an automobile rate filing in those states which have raised the overlap question.

DISCUSSION BY ROBERT W. STURGIS

I intend no disparagement whatsoever of the body of Mr. Cook's paper when I say that one of the most illuminating parts is his introduction. As he points out, there *are* misconceptions, misunderstandings, and confusions; and I can testify to the fact that at least one actuary accepted the trend — development overlap fallacy. In the face of all this, it is indeed surprising that so little has been written on this subject. Hopefully, Mr. Cook's work will be the spur to further scholarly discussion.

Why is this subject so complex? How is it that different clear-thinking professionals can come up with diametrically opposite conclusions? When I finished reading Mr. Cook's arguments I was persuaded that there was no overlap. However, this conviction seemed precarious: I had the unsettling feeling that if I were to read counter arguments, I could be swayed to the other side. I have always waded through logical discourses on trend and development using a time-line visual aid as my guide, but always I wound up worried that I was comparing apples to oranges: effective, expiry, accident, and valuation dates; arising, paid, outstanding, open, and closed claims; inflation acting on past accidents and on future accidents; development of reserves and of number of claims. Of course, it is actuarially unsound to compare apples and oranges, but accepted procedure to relate quarts and liters, feet and meters. The soundness of these relationships, however, makes them no less complex. I was encouraged when I read, "It may clarify the point to build a model." Determined to master the mathematics of the algorithm, I surged ahead, but alas, all I found was the familiar visual aid