

RATING CLAIMS-MADE INSURANCE POLICIES

by Joseph O. Marker and F. James Mohl

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The introduction of the claims-made policy as a vehicle for providing Medical Professional Liability insurance coverage in the mid-1970's clearly marked a turning point in the nature of the insurance market for this volatile line of business. Since the time when the St. Paul Fire and Marine converted their entire Medical Liability book of business from an occurrence form to a claims-made form in 1975, a significant portion of the market, especially the so-called "medical mutuals", has also shifted to providing coverage on this basis. At long last we have a comprehensive, actuarial perspective on the various advantages of this form of coverage and a technical discussion of one approach that can be used to price it. Messrs. Marker and Mohl have filled a significant gap in the actuarial literature in this regard.

This review consists of a series of comments on the various sections of the paper and then a brief outline of another approach that has been used to price claims-made coverage.

### Historic Perspective

Marker and Mohl present a brief but reasonably complete history of the developments that led to the St. Paul's decision to offer Medical Liability coverage only on a claims-made basis. Since no other major writer offered Medical Liability coverage on this basis at the time, this decision presented major challenges as respects the determination of proper rate levels, obtaining approval of the concept from regulatory officials and convincing policyholders that this change was in their long term best interest.

As noted by the authors, most companies responded to the "malpractice crisis" by either pulling out of the market or seeking large rate increases. St. Paul, however, decided to take the more innovative approach of limiting coverage to only those claims reported within the policy period, and thus eliminated the "pure" IBNR projection problem from ratemaking and reserving. There was considerable negative reaction at first from the medical community, largely because of their concern about the availability and price of "tail" coverage. The fact that many of the medical mutuals have subsequently adopted this form of coverage speaks well for their eventual understanding of the actuarial benefits of claims-made, as respects pricing and reserving.

The reader should be aware, however, that there were a few states in which St. Paul did not succeed in getting their claims-made program approved because of opposition from either the medical community or the state insurance department, and this resulted in their pulling out of these states. The fact that St. Paul's program was endorsed by the state medical societies in many states considerably aided their efforts in getting approval of the claims-made concept.

#### Coverage Concepts

In this section of their paper, Marker and Mohl present a clear explanation of the coverage terms applicable to claims-made by referring to a matrix of losses by report year and accident year lag. While the explanations are clear, it should be pointed out that several of the coverage "modifications" made by St. Paul were virtually mandated by the market situation at the time. For example, a "retroactive date" was absolutely necessary to avoid duplication of coverage and policy limits, since virtually all insureds previously had occurrence coverage. Of course, this situation allowed the first year claims-made rate to be about half of what an adequate

occurrence rate would have been, and this temporary premium reduction helped sell the concept. Similarly, the availability of tail coverage had to be guaranteed in most states to obtain regulatory approval.

As pointed out by the authors, a major benefit of the report year/lag matrix approach is that occurrence data can be used to price claims-made policies; however, this approach is only feasible if report date has historically been captured accurately. Since this date was not required for experience reported to ISO, most companies did not begin capturing it until 1976, when ISO began requiring it on all Medical Liability experience. St. Paul was fortunate that it had been collecting this data element on its own experience.

The interrelationships between occurrence coverage, the various types of claims-made policies (first year, second year, etc.) and the role of tail coverage are well demonstrated by Figures 2 and 3, as well as the timing advantage in pricing claims-made.

### Ratemaking Principles

The authors make good use of several simplified examples in this section to develop various "Principles of Claims-Made Ratemaking."

The manner in which data in Figure 5 is manipulated implies that pure premiums, and not losses, are being used. Thus the First Principle should in fact state that a claims-made policy would cost less than an occurrence policy, as long as pure premiums are increasing.

The remaining Principles demonstrate the intuitive benefits of pricing and reserving for mature claims-made policies versus occurrence policies in an unstable claim climate which has been and probably will continue to be the essence of Medical Liability. One minor complaint is that, in discussing reserving, it would have been helpful to indicate that the "pure" definition of IBNR, i.e., excluding case development, was being used.

### Historical Pure Premium Collection

The approach outlined by Marker and Mohl in this section to develop reported losses to ultimate is notable for two reasons: 1) only the case reserve

portion of the incurred amount is developed, and 2) a "backward recursive" formula is used to compute development factors.

The first feature is well suited to the development of report year losses because of the lack of IBNR claims. Thus in developing losses to ultimate, any significant shifts in settlement rates are recognized since paid losses are not developed. In state-wide ratemaking, differences in settlement rates by state can also be recognized. A second favorable aspect is that, assuming that development factors are calculated on a countrywide basis (which is not indicated), loss development is solely a function of reserve adequacy, and therefore the use of country-wide factors should be much less distortive than for occurrence experience where different claim reporting patterns by state make countrywide factors much less appropriate.

The backward recursive approach is a logical one, given the desire to develop case reserves only. Since the procedure starts by assuming an "ultimate" age,  $N$ , after which no further development occurs, the stability of developments between ages  $N-1$  and  $N$  would appear to be fairly critical. Unfortunately, no comments are offered by the authors on this point

or in general on what procedure is used to develop "one-step" factors--simple averaging, weighted average, etc.

The authors' treatment of the determination of appropriate exposures for the report year/lag matrix is interesting in that what is a straightforward process for standard occurrence ratemaking becomes a very tricky calculation for claims-made. While the graphical solution to this problem illustrated in Figure 10 is clear and understandable, one wonders about the difficulty of describing it in a computer program so that it can be automated and the quality of the results controlled.

One other comment in this regard concerns the simplifying assumption that all exposures have a "uniform claim potential" within each report year/lag combination. While this would generally not be a problem, it clearly is not very accurate for first year (and even second year) policies and also for tail policies.

An interesting result of this treatment of exposures is that the number of exposure counts generated by a claims-made policy is equal to the number of report year lags covered by the policy, e.g., a

mature policy generates five exposures. As the authors point out, accurate coding of the retroactive date is critical in determining the maturity and therefore the number of exposures of a claims-made policy.

#### Future Pure Premium Projection

In this section, Marker and Mohl describe their approach for first projecting future mature claims-made pure premiums from historic pure premiums, and then distributing the total pure premium back to each lag period.

The procedure used to accomplish the first goal is noteworthy for potential application to other lines of business. The usual question of determining the credibility of statewide experience instead becomes a question of what method should be used to project statewide pure premiums into the future. If the state's actual experience is not sufficiently stable, then statewide pure premiums (dependent variable) are regressed against countrywide fitted pure premiums (independent variable) using either linear regression or regression through the origin. With this approach, various measures of the fit of the regression are available to evaluate the "credibility" of the statewide experience.



The development of the procedure used by the authors to distribute these mature pure premiums back to each lag period is indicative of the evolutionary process that ratemaking frequently goes through. The original approach of simply regressing each row of the pure premium matrix against time proved to be highly sensitive to random fluctuations. On the other hand, simply averaging the historic proportion for each lag was totally insensitive to real trends in relative pure premiums between lags. The approach finally selected was a weighted average, with the fitted report year total pure premiums used as weights. Because of a normally positive pure premium trend, this resulted in greater weight effectively being applied to more recent observations, which was one of the authors' goals.

#### Special Feature of St. Paul Filings

This section of the paper describes the approach used to price several unique features of the St. Paul claims-made filings, including tail coverage and expense flattening.

Because tail coverage had to be made available to all insureds, St. Paul was concerned because this gave everyone the theoretical option of converting to occurrence coverage at any time. The pricing uncertainty for this coverage was considerably minimized by the decision to sell such coverage in three annual installments, so that an occurrence type projection would only have to be made for the third installment, which would only cover a small percentage of the claims covered by the tail policy. This was a creative solution to a pricing "problem".

In this section the authors also describe two adjustments that were made to historic occurrence data, because of their concern that prior claim reporting patterns would be impacted by 1) an acceleration in the reporting of claims, and 2) an increase in the frequency rate, because of the insured's concern about having claims-made coverage. While the adjustments made were reasonable judgements and were only required during the transition from occurrence to claims-made, it would have been interesting to at least see a comparison of the claim reporting lag before and after claims-made, recognizing that the actual effect on the frequency rate cannot be isolated by itself.

The approach used to flatten expenses is similar to that currently being used in other filings. It is interesting to note that St. Paul decided to flatten expenses by class, as well as by year of claims-made coverage. Prior to this time, very few occurrence carriers had flattened expenses by class, basically because of their concern about its impact on their distribution of insureds by class, when other carriers had not yet made such a change.

#### Other Uses of Analytical Tools

In this final section, Marker and Mohl validly point out that the pricing approach they have developed is not limited in its application to claims-made ratemaking. Their backward recursive approach to quantifying case development can be generally adopted to developing report year losses to ultimate.

In utilizing the report year/lag matrix, however, the reader should be aware of the possible instability that may result from refining experience in this matter. Attention should also be paid to the accuracy of report date coding on non-claims-made coverage.

### An Alternative Approach to Claims-Made Ratemaking

When St. Paul announced their intention in 1975 to convert their book of Medical Liability business from occurrence to claims-made coverage, there was considerable concern on the part of other leading writers as to the effect this would have on the nature of the market. Presumably this could have been (and in fact turned out to be) the start of a general change in the way in which Medical Liability coverage was provided.

In order to be prepared to possibly compete with St. Paul, several major writers asked Insurance Services Office (ISO) to develop a claims-made program (forms and rates) that could be adopted by a member company who wished to offer claims-made coverage. Accordingly a special ISO committee of actuaries and underwriters was formed to develop such a program.

Since claim report date had never been required in ISO statistical reports, an immediate problem faced by this committee was the lack of suitable industrywide compilations of experience that could be used to price claims-made coverage. Fortunately,

several individual companies were able to provide their own data in reasonably appropriate formats, but a sophisticated analysis was not possible given the data and time constraints in effect.

The approach that was developed by this committee was to come up with a series of countrywide claims-made "multipliers" that would be applied to an adequate occurrence rate by state to develop claims-made rates by year of coverage. Thus, after making adjustments for expected changes in claim reporting patterns similar to those described by Marker and Mohl, it was decided that the rate for first year claims-made coverage should be 50% of an adequate occurrence rate. Increasing percentages were selected for the other years of claims-made coverage, reaching 90% for the fifth year; this was in recognition of the fact that a mature claims-made rate should always be less than an adequate occurrence rate. While it was expected that claim reporting patterns would be somewhat different by state, adequate data by state was not available to examine this assumption, and so, countrywide factors were adopted.

This special committee was also asked to recommend the necessary statistical plan changes so that actual claims-made experience written by St. Paul and other companies could be identified and appropriately adjusted for industrywide ratemaking purposes. Thus, claim report date and "Date of Entry into Claims-Made Coverage" (retroactive date) were added to ISO statistical requirements.

While the program developed by this committee was made available to interested carriers, they did not really address how actual claims-made data would be used in ratemaking. This issue was later addressed by ISO's General Liability Actuarial Subcommittee, which had responsibility for Professional Liability ratemaking procedures at the time, and subsequently by the Professional Liability Actuarial Subcommittee.

The GLAS first addressed the general question of whether claims-made and occurrence data should be combined for ratemaking or reviewed separately. Since both types of coverage were being provided to a significant portion of the market and given the credibility problems inherent in making rates by state for Medical Liability sublines, the GLAS felt there was no real choice on this point: claims-made and occurrence data should be combined for ratemaking.

Because many years of experience are needed in Professional Liability ratemaking and since the available occurrence experience was summarized on a policy year basis, the GLAS next decided that, for purposes of statewide ratemaking, claims-made exposures would be extended by current claims-made rates (appropriate claims-made multiplier times current occurrence rate) and occurrence exposures, of course, by current occurrence rates. Thus the actual review of claims-made multipliers would be separately addressed, just as classification relativities are separately reviewed.

In the area of loss development, historic policy year occurrence loss development factors were obviously inappropriate to apply to claims-made losses. Since St. Paul's experience showed that report year case development was minimal, it was temporarily decided to assume that claims-made losses would not be subject to any further development, since they were largely comprised of St. Paul experience. Occurrence losses were developed using historic policy year occurrence loss development factors.

With these adjustments it was felt that the standard ISO ratemaking procedure could then be followed to review the adequacy of occurrence rate levels. When sufficient data was available, the adequacy of claims-made multipliers could be addressed by reviewing accident year/report year tabulations that are being compiled. It was subsequently determined, however, that one further adjustment had to be made in the area of trend. The ISO procedure at the time was an exponential projection of countrywide policy year average incurred claim costs and claim frequencies. When claims-made experience entered these calculations, however, a distortion in the frequency calculation resulted because, for claims-made years, ultimate claim counts (occurrence plus claims made) were being compared to the unadjusted number of insureds.

The eventual solution to this problem was to revise the trend procedure so that policy year ultimate incurred loss ratios are exponentially projected, instead of severity and frequency separately. Since the premium at present rates in the denominator of this calculation reflected the extension of claims-made exposures by claims-made rates, the distortion noted above was eliminated.



While the ISO procedure is clearly not as sophisticated as the St. Paul approach described by Marker and Mohl, it is a reasonably sound technique, given the industrywide data available at the time. It was described here merely to indicate that the St. Paul approach is not the only way to price claims-made coverage.

### Conclusion

In closing this review, there were a few areas not addressed by the authors that would have been of interest to many actuaries. These include:

1. An analysis of increased limits requirements by year of claims-made coverage. It would seem that the severity of claims reported in the first year of claims-made coverage would be less than that of claims covered by a mature policy.
2. A discussion of any differences in claim reporting patterns by class. The original St. Paul filings recognized faster claim reporting for at least two classes: anesthesiologists and neurosurgeons. It

would be interesting to see if their expectations have been met and if any other classes have shown significant differences from the average.

3. A summary of the adjustments that have been made to the Experience Rating Plan for Hospital Professional Liability in order to allow the inclusion of claims-made experience, including its impact on loss development factors, credibility values, D-ratios, etc.
  
4. A discussion of changes required to accounting procedures to accomodate claims-made coverage, especially the manner in which premium is earned.

These minor omissions do not take anything away from the value of the authors' paper, which represents a significant contribution in an area that has not been adequately addressed in the past.