ACTUARIAL STANDARDS BOARD

ACTUARIAL STANDARD OF PRACTICE NO. 13

TRENDING PROCEDURES IN PROPERTY/CASUALTY INSURANCE RATEMAKING

Developed by the
Subcommittee on Ratemaking of the
Casualty Committee of the
Actuarial Standards Board

Adopted by the
Actuarial Standards Board
July 1990

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July 1990

TO: Members of the American Academy of Actuaries and Other Persons Interested in Property/Casualty Insurance Ratemaking Trending Procedures

FROM: Actuarial Standards Board (ASB)

SUBJ: Actuarial Standard of Practice No. 13

Enclosed is the final version of Actuarial Standard of Practice (ASOP) No. 13, *Trending Procedures in Property/Casualty Insurance Ratemaking*. The purpose of the standard is to set forth generally accepted actuarial practices for estimating future expected values in ratemaking, based on analysis of historical data and other relevant information.

The standard was developed by the Subcommittee on Ratemaking of the Casualty Committee of the ASB. It was exposed for comment in July 1989. Twenty-two written responses to the exposure draft were received.

The Subcommittee on Ratemaking reviewed all the suggestions and concerns expressed by both members and nonmembers of the American Academy of Actuaries regarding the draft. As a result, several changes were made to the draft by the subcommittee. Specifically, some significant modifications were as follows:

1. The purpose of trending procedures was redefined in section 1.1 to emphasize the need to estimate future expected values by analyzing historical data and other relevant information. Also, the phrase *future cost levels*, which had caused some concern, was deleted.

2. The scope of the standard was broadened by eliminating the reference to *cost elements.* In addition, the scope was rewritten to make the standard explicitly applicable to all property and casualty lines of insurance.

3. Several concerns were expressed about the context in which the terms *internal data* and *external data* were being used. There appeared to be a potential for confusion, for example, as to whether *external data* encompassed data external to an insurance company or to the entire insurance industry. In the final version, the terms *internal* and *external* data have been replaced by the terms *insurance* and *non-insurance* data, respectively.

4. Various respondents felt that the draft's reference to regression and econometric analysis unduly restricted the actuary's use of modeling in trending procedures. Accordingly, specific references to regression and econometric analysis were omitted and a more general discussion of the selection of models was substituted.

5. It was suggested that the standard be more specific with regard to the manner in which the actuary should evaluate potential selected models, retrospectively and prospectively.

Section 5.2 was strengthened to require the actuary to be familiar with *and consider* various methods for measuring trends, including steps for evaluating the tentatively selected model and possibly revising the model.

6. One respondent suggested that an additional element in the criteria for determining the trending period is the length of the experience period. The final version includes this consideration, in section 5.7(a).

7. Several respondents expressed concern over the frequent use of the term *trend* in the exposure draft. They evidently felt that it was being used as shorthand for the entire trending process, or was inappropriate in some contexts. As a result, the term *trending procedure* replaced *trend* in many places in the standard, thereby also expanding the scope.

8. A wide range of concerns was expressed about the draft's communication and disclosure requirements in section 6. In the final version, the reference explicitly requiring disclosure of material changes was deleted, and so was the example of what would generally be considered a material change. However, the revised section 6.1 specifically notes that the provisions of Actuarial Standard of Practice No. 9, *Documentation and Disclosure in Property and Casualty Insurance Ratemaking and Loss Reserving*, apply to all aspects of ratemaking. Also, sections 6.2 and 6.3 were retained; these set forth communication requirements regarding trend selections and deviations from this standard.

Some respondents felt that definitions of *monetary* or *economic inflation*, as well as *social inflation*, were necessary. However, the subcommittee believed that monetary and economic inflation were terms that are commonly used and understood, whereas the impact of social inflation is not nearly as well known.

Finally, several respondents suggested that specific references be included in the standard relating to other important actuarial procedures such as the selection of a database, assignment of the complement of credibility, etc. These nuances are expected to be addressed by standards of practice relating to these other ratemaking procedures. Therefore, reference in this trending standard to such items has been limited.

Other changes of a grammatical or editorial nature have been made, many in response to comments received. The Casualty Committee approved the revised standard for submission to the ASB for adoption.

The standard was adopted by the ASB on July 13, 1990.

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ACTUARIAL STANDARD OF PRACTICE NO. 13

TRENDING PROCEDURES IN PROPERTY/CASUALTY INSURANCE RATEMAKING

PREAMBLE

Section 1. Purpose, Scope, and Effective Date

1.1 Purpose—This standard of practice provides a basis for assessing procedures appropriate for estimating future expected values by analyzing historical data and other relevant information. The historical data to be considered for analysis are those referred to in the *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* of the Casualty Actuarial Society (CAS).

1.2 Scope—This standard of practice is applicable to all property and casualty lines of insurance.

1.3 Effective Date—This standard will be effective three months after its adoption by the Actuarial Standards Board.

Section 2. Definitions

2.1 Experience Period—The period of time to which historical data used for actuarial analysis pertain.

2.2 Forecast Period—The future time period to which the historical data are projected.

2.3 Social Inflation—The impact on insurance costs of societal changes such as changes in claim consciousness, court practices, and judicial attitudes, as well as in other noneconomic factors.

2.4 Trending Period—The time between the average date of writing, earning, or costs of the experience period and the corresponding projected date in the forecast period.

2.5 Trending Procedure—A process by which the actuary evaluates how changes over time affect such items as claim costs, claim frequencies, expenses, exposures, and premiums.

Section 3. Background and Historical Issues

3.1 Inflation—Economic and social inflation have led to a need for increasingly sophisticated trending procedures.

3.2 Alternative Procedures—The *Proceedings* and the *Syllabus of Examinations* of the CAS, and many other publications such as statistics and economics textbooks, provide extensive information on alternative procedures. The actuary may refer to these or develop other procedures, as appropriate for each situation.

Section 4. Current Practices and Alternatives

4.1 Historical Insurance Data—Trending procedures are used in ratemaking for most property/casualty insurance plans or policies. In such procedures, actuaries generally place reliance on (1) data generated by the book of business being priced, (2) other insurance data, and (3) non-insurance data, in that order of preference.

4.2 Models—Mathematical models are often used to smooth and extrapolate from historical data. In the absence of strong contrary indications, there is a reliance on extrapolations of historical insurance data from the mathematical models. Models based on non-insurance data are also used as trending procedures.

4.3 Actuarial Judgment—In trending procedures, judgmental considerations generally include, but are not limited to, the historical data used, the success of the model in making prior projections, the statistical goodness of fit of the model to the historical data, and the impact of any sudden, nonrecurring changes (e.g., tort reform) which had not yet been incorporated in the historical data.

STANDARD OF PRACTICE

Section 5. Analysis of Issues and Recommended Practices

5.1 Estimating Future Costs—Principle 1 of the CAS *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* states that "a rate is an estimate of the expected value of future costs." Accordingly, the application of appropriate trending procedures in the ratemaking process is essential to estimate those future costs.

5.2 Selection of Models—The actuary should be familiar with and consider various methods in statistics and numerical analysis for measuring trends. This process also involves steps for evaluating the tentatively selected model and possibly revising the model.

5.3 Purpose of Trending Procedures—The purpose of trending procedures is to estimate future expected values by analyzing historical data and other relevant information. Therefore, the actuary should apply trending procedures which appropriately reflect projected changes in such components as claim costs, claim frequencies, expenses, exposures, and premiums over the trending period.

5.4 Analysis of Historical Insurance Data—The actuary should select trending procedures with appropriate consideration given to the analysis of historical insurance data. This includes, but is not limited to, evaluation of:

a. trending procedures established by precedent or common usage in the actuarial profession;

b. trending procedures used in previous analyses;

c. the choice of an appropriate data base and methodology, with particular emphasis given to the credibility of the data relied upon; and

d. the effect of known biases or distortions on the experience relied upon (e.g., impact of catastrophic influences, seasonality, coverage changes, nonrecurring events, and distributional changes in deductibles, types of risks, and policy limits).

5.5 Analysis of Non-Insurance Data—Relevant non-insurance data may supplement insurance data. These non-insurance data may indicate general trends in such components as claim costs, claim frequencies, expenses, exposures, and premiums.

5.6 Economic and Social Influences—Many economic and social influences can have an impact on trends. In selecting the appropriate trending procedure, the actuary should consider those economic and social influences that may have an impact on trends. It is inappropriate to analyze only those factors that have an impact on trend in only one direction.

5.7 Criteria for Determining Trending Period—In determining the parameters (e.g., average dates of writing, earning, or costs) associated with the experience and forecast periods, criteria such as the following should be considered:

a. the length of the experience period;

b. the expected length of the forecast period (e.g., 2 years);

c. the term of the policies (e.g., 1 year, 3 years) contributing to the experience and forecast periods; and

d. the distribution of policies written or costs incurred throughout the experience and forecast periods (e.g., uniform distribution).

5.8 Informed Actuarial Judgment—Any trending procedure requires the actuary to exercise informed judgment, using information on historical insurance data and the impact of relevant economic and social factors, as well as statistical validation and testing procedures.

Section 6. Communications and Disclosures

6.1 Documentation and Disclosure Standard—The actuary should be mindful that the provisions of ASOP No. 9, *Documentation and Disclosure in Property and Casualty Insurance Ratemaking and Loss Reserving,* adopted by the ASB in April 1989, apply to all aspects of ratemaking.

6.2 Trend Selection—If a trend is selected that is substantially different from one that is suggested by the range of available relevant information, the reasons for such a selection should be documented and disclosed.

6.3 Deviation from Standard—An actuary who uses a procedure which differs from this standard should include, in the actuarial communication disclosing the result of the procedure, an appropriate and explicit statement with respect to the nature, rationale, and effect of such use.