

dwelling risks) on any formal industry program. The McGuinness proposal is believed to involve the collection of losses related to insurable value on initially a simple class basis. He would then determine the maximum percentage of loss involved in, for instance, 90% of all claims in each category.

This procedure is seemingly the reverse of the typical deductible analysis. It is believed that one will readily appreciate the considerably more difficult task of making reliable estimates of the appropriate charge in risk rates for losses in excess of, say, 90% of insurable value than determining the expected savings under a 1% valued deductible. Incidentally, the percent deductible savings is a function of risk size which, also, would not likely prove a negligible factor in the McGuinness proposal.

It is possible that some companies are now collecting, for their own use, data on the percent loss to insurable value, and such statistics may well be helpful in setting company line sheets and underwriting risk gradings. It is thought that many underwriters are not unaware of the danger involved in projecting top line loss experience in view of the relatively small likelihood of loss in these upper regions, and are guided accordingly in the PML evaluations.

In summary, this reviewer believes that Dr. McGuinness is to be commended for an interesting and thought provoking article of particular value to the CAS membership as a reminder of the work by European actuaries on the Pareto curves.

#### DISCUSSION BY EDWARD B. BLACK\*

The author's treatment of the Probable Maximum Loss concept is both interesting and thought-provoking from an underwriter's viewpoint. It is a subject of great importance because a clear understanding of PML and its application can spell the difference between profit or loss, success or disaster, in the property insurance line. Mr. McGuinness aptly establishes this fact in his reference to the large losses at the oil refinery in Louisiana and the exhibition building in Chicago, Illinois. No one can debate the serious outcome of the reported deficiencies in the PML factors in such instances and I suggest these two examples could be multiplied many times in any year

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\* Mr. Black was a guest reviewer of this paper. He is Secretary-Underwriting at the Insurance Company of North America and is in charge of that company's commercial fire and allied lines underwriting.

although, fortunately, to a considerably less extent. Nevertheless, while I agree with the author's approach to achieve the purpose of the paper, i.e., showing how PML can be made a useful and valuable tool, I find myself dissenting with or questioning the validity of a number of statements.

For example, Mr. McGuinness states that the concept of PML is "one of the least clear concepts in all insurance." It is true that the definitions may vary between underwriters when put down in words, but I feel strongly that there is a universal meaning as to the end result which all underwriters expect PML to accomplish. It seems to me that the situation is analagous to the familiar quotation, "A rose by any other name would smell as sweet," i.e., PML, no matter how you define it, is simply *Probable Maximum Loss*. It is neither *foreseeable* nor *possible* loss — rather, it is the maximum loss which *probably* will happen when, and if, the peril insured against actually occurs. My observation is based upon numerous discussions of the subject with underwriters in this country, from both stock and mutual companies, and with underwriters from abroad. The words they use may be somewhat different, but they all translate to the same final meaning.

In view of the above, I do not feel that a new or standard definition will change results and emphatically disagree with the suggestion that there should be two precise definitions, one suited to the insured and his risk manager and another suited to the insurer. It seems highly improper to me that the insured should consider anything more than the total value of his property exposed to *any* peril, i.e., the amount subject to possible total loss. The only safe and proper course for the buyer is to purchase enough insurance to protect this maximum exposure. To encourage him to do otherwise through consideration of *any* Probable Maximum Loss concept is to tread on thin ice and could lead to improperly exposing his financial interests.

The same reasoning does not (or should not) apply to the insurer. As Mr. McGuinness so aptly states under the heading "PML and the Stability of a Portfolio," "the purpose of setting underwriting retentions is to stabilize an insurer's experience so that one or more individual losses will not adversely affect its over-all underwriting result by more than a specified amount during any one year." The PML concept is invaluable here for it is the device that enables the underwriter to accept maximum lines (amounts) on individual risks, thus obtaining maximum share of the total premium while theoretically holding his expected or probable loss exposure within acceptable limits. It is for this reason that the underwriter

cannot afford to enjoy the caution and conservatism of selecting the maximum *possible* PML in every instance. Almost invariably, the windstorm or tornado PML will be greater than that of fire and to select the largest peril — PML would result in a tremendous reduction in desirable premium via more limited capacity geared to retentions.

There are several statements under "Methods of Measuring PML" which appear controversial. First, the author states that facts relating to probabilities are not presently being collected. This is not entirely correct because this long-existing industry deficiency is currently being rectified with the National Insurance and Actuarial Statistical Association's recent statistical plans. In concert with Mr. McGuinness' purpose, underwriters eagerly anticipate the time when sufficient facts have been accumulated from the industry to support precise PMLs. Nevertheless, some individual companies have in the past collected, and continue to collect, experience data from their own loss records and other public sources. (Example: inspection or rating bureau reports and analysis of individual loss occurrences.) It is the continual review and study of such instances that develop the skill and aid the judgment of the experienced property underwriter.

Second, and most important, I take issue with the author's statement that "the simplest approach to measuring PML is to obtain the amount of claim and the amount of insurance on each risk that has sustained a loss during a given year, and to classify these paired figures by major statistical class." My point of issue is not with the approach which is meaningful as respects homogeneous units of the same, or approximately same, value. What I question is the value of this approach from a practical viewpoint when one is considering the concept of PML. It seems to me that companies fall into two categories when underwriting risks of small value such as lend themselves to the table technique used in the paper. Companies with high retention levels are not concerned with PML on such risks — rather, it is a simple matter of rate adequacy or inadequacy. They will either want all of the risk, or none of it. Alternatively, companies with small retentions will shy away from the practice of using a PML on such risks even though the PML results developed through the suggested study will be valid. Admittedly, such a study could result in the small company raising its retentions on a class of risks (again, presupposing adequate rates), but I suggest they will *in practice* continue to consider these small risks as 100% PML and rely upon reinsurance treaties to protect them above their retention(s).

From a truly practical standpoint, I suggest the concept of PML would gain much greater reliability if individual losses of \$25,000 or more on properties valued at \$100,000 or more would be studied and results recorded without giving weight to the coinsurance or average clause (if any) in the policy. The author's Table rightfully points out that there is no relation between the average clause and the amount of insurance purchased, but the figures shown under amount of claim would infer that losses are commonly and correctly adjusted within the framework of the average clause requirement. It is unrealistic to make this assumption due to the many variables in an actual adjustment, e.g., the *true* actual cash value or replacement cost of the property; proper consideration of inflationary factors; carelessness on the part of the adjuster.

I believe a study on the basis described above (dollar loss incurred vs. value), related to the factors mentioned — occupancy, construction, protection, peril, coverage plus exposure — over a reasonable period of time, would be the best method of producing guidelines for reasonable, efficient determination of individual risk PML. This suggestion's practicality is indirectly recognized by the author in his statements relative to "Judging Underwriters' Performance in Estimating PML." An on-going, continuously updated, study of this type would improve the results desired from use of the PML concept, but would never, in my opinion, entirely replace the subjective evaluation of each risk by the seasoned underwriter.