

Factors in determining an insurance company's risk retention

William A. Weeks

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Article abstract

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Factors in determining an insurance company's risk retention

by

William A. Weeks, AIIC⁽¹⁾

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The designing of a reinsurance programme for an insurance company begins with the most difficult task of fixing retention limits. Several attempts have been made to produce formulae which will develop some hoped-for magical number thus guaranteeing optimum results. Another approach has involved the use of computer model simulations. Unfortunately, the number of variables has prevented the determination of "the" correct retention. As a result, retentions from both a proportional and non-proportional point of view are more likely to be fixed on the basis of market practices and generally accepted rules of thumb which have been established over a period of time.

Let us examine briefly some of the factors to be considered in determining this essential part of a company's operations.

(1) Mr. Weeks is Vice President of Canadian International Reinsurance Brokers Ltd., member of the Sodarcan Group.

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One of the main objectives of an insurance company in buying reinsurance is to stabilize its annual results within a dollar range proportionate to its equity by reducing the fluctuations in claims experience. It must, therefore, cede off the unusually severe losses while retaining sufficient premium to meet the deviations in unreinsured claims experience. In order to assist the company in achieving this objective, various forms of reinsurance, including both facultative and treaty, can be utilized. A different retention could easily be called for depending on the reinsurance programme chosen, e.g. a per risk retention for surplus reinsurance, a per claim amount for per risk excess of loss reinsurance, a percentage of the portfolio under Quota Share, etc.

Different retentions will not only have an effect on the net claims experience but will determine the amount of premium the insurer has to invest, the degree of liquidity which must be maintained, the level of general expenses, etc.

One must also examine the claims experience of the future and there are some factors which cannot be quantified but which must be considered. These would include inflation, natural disasters, crime rate, the economy, etc. It follows that where there is pessimism or doubt in such areas, a more conservative approach to the level of net retention should be taken than when a degree of optimism is present.

Since reinsurance is going to be a major tool in the overall operations of the company, some consideration must also be given to the availability of reinsurance at the terms desired by the insurance company. It is quite conceivable that a company would have to decide on a retention other than what it considers the optimum due to reinsurance factors. By the same token any improvement in the claims experience on the net retention brought about by the use of reinsurance would have to take into consideration the cost of this reinsurance at this retention level.

To illustrate how different reinsurance covers would affect the determination of retention, we could consider, on the one hand, a per risk excess of loss arrangement, and on the other, a surplus arrangement. Both forms are intended to protect against large losses. However, the surplus treaty, being proportional, also covers small and medium sized losses. The working cover excess of loss treaty leaves all losses below the priority to be paid by the insurance com-

pany. Thus, the impact of an unusually large number of small losses would have to be given special attention when considering the retention under a per risk excess of loss agreement.

Retentions under a surplus programme are traditionally varied according to the degree of loss exposure anticipated by the underwriter, i.e. a lower retention is established for hazardous or heavy risks, with a higher retention being utilized with the less hazardous or light risks. This theory has been challenged in some circles, due not only to the high cost of administration, but on the basis that the actual exposure on high rated risks should not be any larger than that on low rated risks. It is felt that if the risk has been correctly rated the degree of loss exposure has been more or less equalized. On this basis, retentions are merely graded based on risks which are "correctly" rated with a lower retention for risks which are rated "incorrectly".

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This leads into the so-called "individual risk theory" where it is felt that a larger portfolio of risks, together with the larger loss occurrence probability, reduces, in relative terms, the risk potential. We personally find this somewhat hard to grasp, particularly when the conclusion is that not only should the retention for all risks which are rated correctly be identical but in addition high retentions should be utilized for high rated, i.e. heavily exposed risks with low retentions applying for low rated or low exposed risks. This does seem to be in conflict with the normal approach to retentions. In addition, of course, we feel in practice, there is the perennial difficulty of determining those risks which are "correctly" rated and those which are not.

Under quota share reinsurance, the business retained and the business reinsured will always have the same loss ratio, thus the only improvement for an insurance company is in the absolute amount which a loss may attain. The insurance company must, therefore, approach this question by determining the amount of annual loss which it is prepared to accept for the class of business being covered. If this is expressed in terms of absolute dollars it is merely necessary then to estimate the maximum loss rate on the portfolio to determine the amount of quota share necessary. To illustrate this, if we assume that the insurance company is prepared to accept an annual loss of \$100,000 on a portfolio generating \$5,000,000 in premium income,

the accepted loss rate would be 2% of the premium. If the insurance company estimates that the loss rate for the coming year could be as high as 6%, i.e. \$300,000, it would then have to reinsure 2/3 of its business in order to limit the annual loss to \$100,000.

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There is no doubt that premium volume plays an important role in the question of setting a retention. There is a definite correlation between the increase in premium volume and the increase in retention. The theory is based on the not unreasonable assumption that, provided the claims distribution remains unaltered and provided the company's portfolio is composed of independent risk units, the claims results will tend to become more stable, thus permitting a higher retention without increasing the probability of seriously impairing the company's reserves.

This theory pre-supposes that one is able to anticipate economic changes in a market. A quick look at the Canadian market in recent years shows a very volatile situation making it extremely difficult to apply the theory in practice.

Aside from technical underwriting considerations, there is also the question of corporate considerations. A company with a large capital and surplus might feel that with such financing, large retentions which represent only a small percentage of their surplus could easily be accepted. If the retention has been set at a relatively high level on this theory and perhaps on the basis that the business is well spread and not really subject to a significant catastrophe loss, it is difficult to defend the wisdom of the decision after a large loss occurs. Somebody will have to explain this loss to the Board and/or Shareholders and they will be interested in the fact that the loss happened, not in the statistical wisdom which provided that it was almost inconceivable. This leads, of course, to the problem of impairing the per share earnings of the company.

Consideration must also be given to setting a level of retention with which the company itself feels comfortable. Some company's management seek the ultra conservative approach and their retentions are set based on this desire. In such a case, more reinsurance would be purchased and retentions would be lower. Conversely, a management whose main interest is retaining as much of its business as possible, thus maximizing its income, will probably have to take

greater risks, thus selecting higher retentions, all in the full realization that its results could be subject to greater fluctuations.

There is also an external influence which emanates from the regulatory authorities. While nothing is currently set out in any of the regulations governing the operations of insurance companies in Canada, there have been a number of guidelines utilized. For example, one figure often quoted is that a per risk retention for property and a per occurrence limit for casualty should be in the area of 2% to 3% of a company's capital and surplus and a property per event catastrophe should be limited to 10% of a company's capital and surplus. Like all rules of thumb, they are always subject to examination in the light of particular circumstances.

At the present time the Federal Department of Insurance is considering the introduction of amendments to legislation which would have both direct and indirect effects on retentions. These include the following :

- a company must keep a minimum retention on each policy of 10% of the limit or 1% of the company's paid capital and surplus, whichever is smaller ;
- reinsurance ceded must not exceed 50% of premiums received after five years of operation ; the limit in the first five years of operation for a new company would be 75%.

As mentioned earlier, there have been many actuarial-type studies made in an attempt to produce some relatively simple formula or guidelines for the studying of retentions. Nowhere have we seen such a formula which could be considered any more than theoretical in its approach to the problem. There are simply too many independent factors, many of which do not lend themselves to easy mathematical analysis.

In summary then, retentions must be set by management consistent with their goals and objectives and weighed in the context of the availability and cost of reinsurance to achieve this end.