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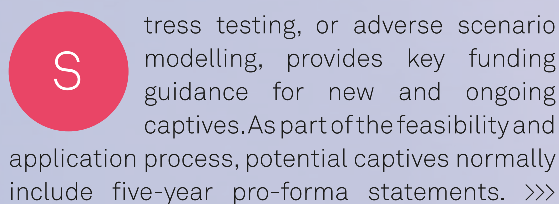
Defining and modelling adverse scenarios for captive insurance

New and existing captives must provide adverse scenario modelling as part of their feasibility and application process, but most domiciles do not explicitly outline the specific adverse scenarios that should be included. Captives should engage their actuaries early and often, say Enoch Starnes and Michelle Bradley at Sigma.



Stress testing, or adverse scenario modelling, provides key funding guidance for new and ongoing captives. As part of the feasibility and application process, potential captives normally include five-year pro-forma statements. >>>

Despite potential variability within the estimates of future projected losses and the associated premiums, many portions of the feasibility study are relatively rigid in terms of structure. Tax rates, fees, and capitalisation amounts are typically reliant on regulatory and domiciliary standards, and differences from the norm may not be significant.

Pro-formas are often presented in one of two ways: an expected loss level basis or an adverse loss scenario basis. What constitutes reasonable assumptions related to an adverse loss scenario then becomes the critical step.

Most domiciles do not explicitly outline specific adverse scenarios that should be demonstrated. This is probably because the individual risk profiles and overall portfolio risk profile, along with the programme structure, should be considered in forming assumptions related to a reasonable scenario. It is important that adverse scenarios are intended to show the stress on surplus and other key metrics over the five-year period, but these scenarios are not intended to demonstrate the worst-case possibilities.

Some common examples are:

- Loss ratio deterioration for specific risks in specific years
- A single or multiple shock losses (specific claims) in specific years
- Aggregate losses at higher confidence levels (85 to 90 percent) for specified years
- Some blended combination of the above

The variability associated with the loss projections and premiums requires discussion with the actuary in determining reasonable adverse scenarios. Even with the common ways in which scenarios are handled, there may still be questions regarding how to demonstrate.

As an example, consider the placement of years containing adverse loss experience within a multi-year proforma. While a common approach is to alternate years (such as using the second and fourth years in a five-year span), this may not follow logically from the risks being considered. Some risks have such a low probability of occurrence that one adverse year is more likely, and others may require multiple, sequential years.

Another significant choice lies in the decision between using a "shock loss" and general deterioration (ie, higher confidence intervals) to constitute an adverse year. Again, the answer will almost certainly lie in the risk(s) being placed into the captive, specifically the frequency and severity of each risk's claims.

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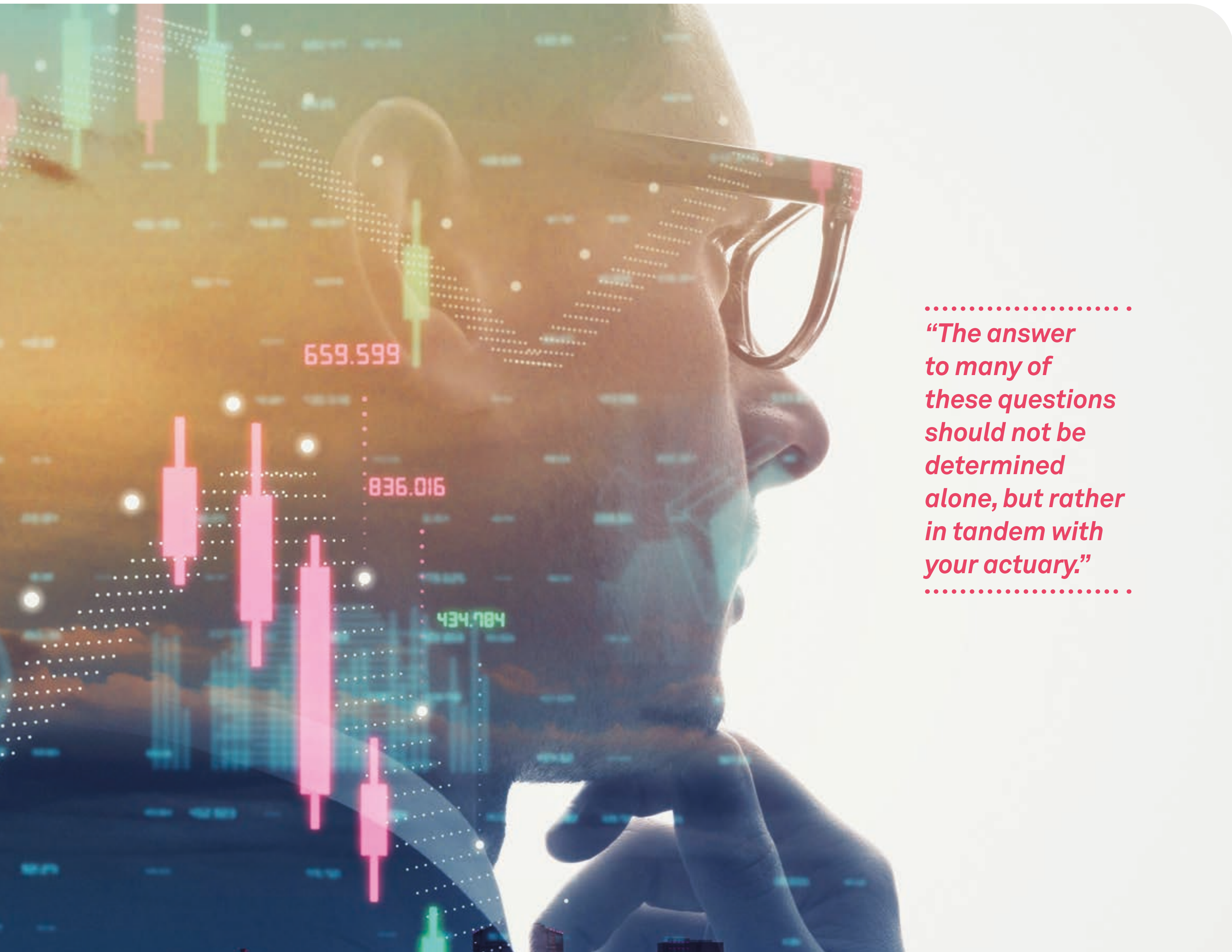
Retentions

The retentions of the captive's covered risks must also be examined during this process, especially when determining the type of adverse experience to use. For risks with relatively low retentions, a single "shock loss" is not likely to have a significant impact on the captive's financial stability and is therefore probably not indicative of a true adverse scenario.

On the other hand, losses may have a more "binary" role within the captive, where a year is effectively determined by the presence of a claim, or lack thereof. The effect of both per occurrence and aggregate retentions will also play a significant role, so it's important to know the specific details of each risk being placed into the captive.

This decision grows increasingly complex as multiple risks and/or entities are introduced to the feasibility study, particularly if they represent varying degrees of claim frequency and severity.



"The answer to many of these questions should not be determined alone, but rather in tandem with your actuary."

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The first consideration is whether adverse losses should be handled on a programme-wide basis or determined individually. A blend of these options may be the ideal choice, but as a captive grows in complexity, the effort needed to create a reasonably blended scenario grows exponentially.

One potential solution lies in the creation of combined aggregate probability distributions for the portfolio. Regardless of the solution, this decision should be discussed early in the actuarial process, as it will likely have a substantial impact on how the actuary prepares the loss projection analytics to be used in the study.

The answer to many of these questions should not be determined alone, but rather in tandem with your actuary. Explaining your ultimate objectives and challenges will help guide the discussion, as will the actuary's own experience in preparing prior feasibility studies. Other, more specific items, such as how to handle adverse losses if your organisation already books at higher confidence intervals, should also be included.

Dialogue focused on what can "go wrong" within a risk portfolio might be complex, but it should never be one-sided. By engaging an actuary early and often in the feasibility process, potential captive owners should feel increasingly comfortable with defining adverse scenarios and devising strategies based on the associated financial impact.

Enoch Starnes is an actuarial analyst at Sigma. He can be contacted at: enoch@sigmaactuary.com

Michelle Bradley is a consulting actuary at Sigma. She can be contacted at: mb@sigmaactuary.com

SIGMA ACTUARIAL CONSULTING GROUP, INC.