

Pricing Insurance Risk

Predicting the Cost of Future Claims

For the directors and senior management of an insurance operation, the greatest fears are having insufficient funds to pay claims and failing to earn an adequate return on capital.

There are many ways these fears may be realised, including poor sales, failure to control operating expenses, bad investment outcomes or operational problems. One of the most likely causes however is higher than forecast claims costs.

It is a truism that “insurers exist to pay claims”. The problems start when the actual cost of claims exceeds claims targets by an uncomfortable margin. In mild cases this impairs profitability; in extreme cases it chews into capital and undermines solvency.

The list of possible causes of higher than anticipated claims costs is long and sobering. We thought it would be worthwhile to compile a list of the usual suspects and consider how they can work alone or conspire together to frustrate management’s plans to meet their financial objectives.

Predicting claims

Generally, insurers pool risks by collecting, in advance, contributions from insureds into a fund from which claims are paid. When an insurance proposal is received, the underwriter cannot know whether or not the underwritten risk will result in a claim. The aim is to collect sufficient contributions in total from all insureds to be able to meet the unknown future costs of claims and expenses and to grow the insurer’s capital base.

So how much should each insured contribute to the pool? It seems reasonable that those with a greater exposure to loss (i.e. a greater risk) should pay a higher contribution. Other factors to consider include uncertainty about the level of risk, market pricing and regulation. In any case, the way the total contributions pie is divided between the insureds is secondary to the need to make sure that the pie is big enough to meet all costs.

Influencing the predictability of claims costs

Each of the influencing factors described below is considered in isolation. In practice, the factors will interact in ways that might produce unexpected results – to that end, the qualification “all else being equal” applies to each item.

The number of claims When predicting claims costs, more claims lead to better predictions. Statisticians call this effect “the law of large numbers”. For some large commercial or group risks the claims experience is sufficient to allow that business to be rated partially or fully on its own experience.

Length of claims history A longer claims history means more claims (see point above) and a clearer picture of the possible claims experience, including seasonality effects, trends and large events. The limiting factor is that “old” claims experience may no longer be relevant and so may not be a good guide as to what could be expected in the future.

Claims size Less variation in claim size is better. If a single loss could ultimately cost anywhere between a few dozen and a few million dollars, as is the case with ACC bodily injury claims for example, predicting claims costs is tricky. This is where excesses, policy limits and reinsurance make life easier by limiting the potential range of claims costs borne by the direct insurer.

A related pricing problem for portfolios that experience infrequent large loss events is that the past claims experience may not reflect the incidence and cost of such losses. This could be because there was no large event during the period of investigation, or because the exposure and therefore potential severity has changed over time. The pricing basis must somehow anticipate and incorporate these large events. Again, reinsurance can assist from a risk reduction and pricing perspective.

Short tail versus long tail If claims are identified, notified and settled quickly, it’s much easier to get a handle on how much they will ultimately cost. The nightmare scenario is where large claims remain “hidden” for many years – asbestos or environmental pollution claims being a case in point. As well, longer settlement delays allow claim cost inflation to do its work.

Stability of exposure If the mix of risks covered or the type of cover provided change significantly over the period of exposure being considered for rating, then past experience is a less reliable guide to the future. This is where the underwriter’s judgement becomes vital. Of course, even the best judgement can fall short where the claims environment changes radically without warning – such as the impact of different judicial interpretations or legislation.

Period of cover Longer periods of cover mean that any rating errors cannot be corrected quickly. For example, the claims impact of an economic downturn on a single premium loan protection or extended warranty insurance portfolio can’t be incorporated at all for the existing book of business, some of which may have an outstanding term of up to five years. Short term travel insurance cover on the other hand can be quickly re-rated if systems allow. The common one year renewable business sits somewhere between.

Number of risk factors Where there are many rating factors and many levels within each rating factor, complexity rises sharply and interaction effects can bite. Think of the complexities of rating private motor insurance compared to, say, group personal accident risk. Even with modern rating systems, complexity increases the chances of rating errors. Also, comparing your rates with competitors' becomes a challenging exercise.

Independence Aggregations or accumulations of risk keep underwriters and actuaries awake at night. Where losses are "independent", that is caused by separate events so that the occurrence of one loss is unrelated to another, the cost of claims is easier to predict.

However, when losses behave badly and occur all at once, perhaps caused by a large event such as an earthquake or storm, or perhaps because of physical proximity or a change in general conditions such as an economic slowdown, pricing assumptions based on claim independence break down. For large events, catastrophe reinsurance can provide considerable relief. For longer-term secular changes, like recessions, an appropriate response by the underwriter to the changing conditions is required.

The greatest threat may be entirely new and unexpected causes of aggregations of risk. The LMX spiral in the London Market in the late 80's is a good example.

Diversity and homogeneity In a homogeneous portfolio the risks covered are broadly similar. The opposite is the case for a diversified portfolio. In practice, nearly all portfolios are diversified to some extent. Factors that could influence a portfolio's diversity include geographical spread, the possible perils giving rise to claims, scale of risks, social classes, industries and how policies are sold.

Diversity is a factor that cuts both ways. Greater diversity means a reduced possibility of aggregations, whereas greater homogeneity makes prediction, risk assessment and rating easier because it is easier to understand which factors most affect the risk. Balancing these sorts of considerations is a good reason why underwriters won't find themselves being replaced by computers in the near future.

Moral hazard and adverse selection In an insurance context, moral hazard describes situations where the existence of insurance causes a change in the behaviour of the insured in a way that leads to greater losses than otherwise. This could range from a more relaxed attitude towards security and risk management through to outright fraud. This problem may not be too serious if the exposure and cover has been relatively stable.

Adverse selection occurs when an insured takes advantage of knowing more about the risk involved than the insurer does. Some risks are better understood than others, some markets more competitive, and some insureds better informed. Bumbling into a competitive and well informed (read broker-serviced) market without understanding the expected claims cost of individual underwritten risks will almost certainly lead to "information asymmetry" between the insurer and the insured. This is a recipe for adverse selection and greater than expected claims costs, best summarised by the insurance aphorism "bunnies get skinned".

Two scenarios - Pricing Heaven and Hell

Heaven You must have done something right. The CEO has appointed you as the underwriter to head a project team to revamp the company's rather tired and uncompetitive personal lines product offering. You get a pay rise and an office overlooking the harbour. The product is annually renewable and the IT team have extracted five years of complete, accurate, stable and statistically credible claims and policy data that leaves the actuaries blinking in stunned disbelief at their good fortune. Claims are reported and settled promptly and the market customarily uses only a small number of rating factors when setting rates. The portfolio's client base and cover has been stable but has a good geographical spread and there are no apparent aggregation or accumulation risks.

Hell You'd heard on the office grapevine with your previous employer that a major restructuring was in the offing. The claims experience on those incidentals you wrote in your account was starting to turn ugly, with consequent risks for your reputation. The local job market had dried up so rather than take a punt on surviving the shakeout, you decided to apply for that product manager position in a small, mountainous, equatorial country recently emerged from decades of repressive rule. You got the job.

Your objective in this new market is to capture a minimum 15% market share within three years. As a startup company you have no clients or distribution base, no claims history and no systems. However, full systems development and actuarial support will be provided from the Head Office.

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