Sound ERM Captures Stakeholder Biases

Why Behavioral Risk Matters

By Graham Fulcher and Matthew Edwards

Insurers traditionally monitor conventional risks as part of their enterprise risk management (ERM) programs, but there is also much value to tracking behavioral risk in their risk mitigation efforts.

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Insurers' ERM concentrates largely on risks such as mortality, reserving, underwriting, catastrophe, financial and operational. Policyholder behavioral analysis is also a focus, particularly for life insurers. This article argues that insurers should incorporate their stakeholders' risk behavior into their ERM framework.

The Basics of Behavioral Economics

Conventional neoclassical economics assumes individuals have rational preferences among outcomes and act rationally to maximize utility given these preferences.

The recent discipline of behavioral economics explores the limits of conventional economics but also relates directly to risk culture. It incorporates insights from psychology, particularly ways in which social, cognitive and emotional factors often cause individuals to act irrationally and demonstrate biases in behavior and decision making, especially when faced with risk and uncertainty.

Understanding behavioral economics will help chief risk officers (CROs) make appropriate risk-related decisions. Risk management is intrinsic to insurers' very nature and economic rationale. It is essential for a CRO to understand the biases of the company, customers, shareholders and competitors; help individuals to manage them; and understand the implications for the firm's wider risk management framework and its external actions.

Thinking, Fast and Slow

Psychologist Daniel Kahneman, the 2002 Nobel Prize winner for his work in economics (principally with the late Amos Tversky), is a leading researcher on heuristics and biases, and on Prospect Theory.

Heuristics are experience-based techniques for problem solving, such as rules of thumb. Prospect Theory is a generalization of the classical utility approach, which allows for the biases people exhibit when faced with uncertainty.

Kahneman details his work in *Thinking, Fast and Slow,* which draws on recent research in cognitive and social psychology. He identifies biases, develops a vocabulary that people and organizations can use to acknowledge and discuss them, and suggests ways to allow for them in decision making.

In this article, we will draw on a small sample of biases that individuals exhibit and discuss applications to insurers' risk management programs. We will also explain how CROs can help their companies manage behavioral risk by helping them understand how biases can affect decision making.

We will cover the following:

- Anchor bias
- Availability heuristic — risk identification
- Black swans and anti-fragility — risk mitigation
- Planning fallacy and related biases

Anchor Bias

Anchor bias occurs when individuals are asked to estimate an unknown quantity. If, before estimation, individuals are presented with a particular value for that quantity, then their estimates inevitably stay closer to that presented value than would otherwise have been the case.

This can be illustrated by asking for an estimation in two parts. For example, subjects could be asked:

- Was the Peace of Westphalia signed before or after 1815?
- What is your best estimate of when the Peace of Westphalia was signed?

Typically, answers to the second question are, on average, significantly later (in some cases, 300 years later) than those given by a group asked the same questions but with the 1815 anchor changed to 1515.

Astonishingly, the same bias is produced even when individuals should know that the anchor in the first question cannot have any influence on the second question, for instance, when they have generated the anchor themselves.

Anchor bias is often exhibited by insurers in their choice of parameters when building internal models — a bias sometimes encouraged when regulators expect companies to justify deviations from previous iterations, a market average or a standard regulatory formula. Insurers can be anchored in their model design to market-standard approaches, or to models developed for a different context or purpose.

However, the applications are much wider. For example, a full understanding of anchor bias can be very useful for insurers when in a merger or acquisition.

For a seller, the early release of internal reserve reviews and even sell-side valuations can cause potential buyers to be anchored toward the vendor's own reserve position and preferred valuation.

For a potential buyer, it is important to avoid this anchor effect. For instance, a buyer could prevent its own team or advisors from being anchored by withholding the information until they have completed their own work. A second, more psychological approach (which proves effective in practice) is to internalize arguments against this anchor, for example, by focusing on other anchors, such as the cost to the seller of not making the sale or an estimate of the minimum possible price the vendor could conceivably accept.

Anchor bias can also be important for insurers' finance and actuarial teams when setting reserves for new lines of business (especially when they are long tailed). The business plan of the new underwriting team can unwittingly act as an anchor even if it was formed as part of an acquisition or interview process. What's more, the standard Bornhuetter-Ferguson reserving technique can mathematically incorporate these results as an anchor on the real results for many years if, as is common, the business plan is used to set prior loss ratios.

Kahneman mentions one potential application for insurers — caps on personal injury awards, which are typically favored by insurers. He argues that the very existence of a cap can instead act as an anchor to judges or juries and cause the average size of awards to increase. The cap can increase awards that would otherwise have been set much lower and so worsen the position of insurers.

Availability Heuristic — Risk Identification

Availability heuristic is a shortcut that people take when trying to estimate the probability of events. Their probability estimate is biased by how top of mind the event is (i.e., the "availability" of the event to their thinking). For instance, public surveys indicate that high-profile causes of death (e.g., tornadoes) are considered much more frequent than they actually are, the opposite of lower-profile causes such as diabetes or asthma.

Risk evaluation may be a core function for insurers, but they are still susceptible to this type of bias. The Centre for the Study of Financial Innovation's biannual Insurance Banana Skins survey is a case in point. It asks respondents to rank the risks that most concern them and found the following:

- Climate change ranked number four in 2007 (the year of the high-profile Intergovernmental Panel on Climate Change *Fourth Assessment Report*) and fell to 28 two years later, although the long-term nature of this risk and its potential impact changed little, if at all.

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The Theory of Premortem

The psychologist Gary Klein developed the concept of a premortem to overcome planning fallacy, positive groupthink and overconfidence.

For insurers, before a commitment to a business plan, the CRO should gather all key stakeholders and elicit reaction to a scenario 18 months into the future, when the company is managing a disastrous plan outcome that exceeds previously identified risks. Stakeholders would write the CRO an e-mail explaining why the plan failed and then responses would be discussed. The CRO can then mitigate these risks or even reevaluate the project.

This simple technique creates a safe environment in which to express concern about a plan. It also anchors views on the failure of a plan and makes it much easier to think about its risks. Normal business planning commits and anchors employees to a plan's success.

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- In the 2009 survey, the four top-ranked risks (investment performance, equity markets, capital risks and macroeconomic trends) were all clearly related to the financial crisis. Only two years earlier, these had ranked 11, 13, 26 and unranked, respectively.
- Concerns about natural catastrophe risk varied depending on recent activity: It ranked number two in 2007 (with the 2005 trio of Katrina, Rita and Wilma still uppermost in people's minds), down to 22 in 2009 (as the financial crisis distracted attention and completely dwarfed the impact of Hurricane Ike) and back up to four in 2011 (after a range of catastrophe losses globally). Again, little changed over this timescale except perception.

A clear understanding of this bias is key in the risk identification process. We suggest a two-stage adoption strategy, splitting risk identification into working-risk identification and tail-risk identification.

Working-risk identification focuses on risks with, for example, a one-in-10-year return period (or similar order of magnitude). For these risks, availability bias can be a positive influence because the focus is on recent historical performance.

Tail risks (e.g., one-in-200-year risks) are where the impact of availability bias is greater. CROs can do the following when assessing tail risk:

- Consult as widely as possible in the organization.
- Read as widely as possible across industries, and look at historical crises and events to expand the number of risks available.
- Look back at past years' lists of major risks, and consciously ensure that the risk ranking does not vary too much from year to year, driven by topical events.
- Encourage less focus on recent events by risk workshop participants and propose new approaches, such as asking participants to imagine they had not read a newspaper for the last five years and to say what risks the company would face.

Black Swans and Anti-Fragility — Risk Mitigation

Organizations, including insurers, commonly claim they devote time to identifying potential black swans (high-impact, unanticipated events, from the Nicolas Taleb book), suggesting that black swans are an important element of better risk identification. This is a fundamental misunderstanding: Black swan events are unidentifiable outliers, and nothing in the past can plausibly predict what form these might take. Black swans are really an issue of risk mitigation. The key role of the CRO and of ERM is not to identify these events but to reduce insurers' fragility and increase their robustness to ensure they can withstand these remote and inherently unpredictable events.

In his latest book, *Anti-Fragile,* Taleb defines fragile entities as ones that are particularly vulnerable to uncertainty, risk and shocks. Anti-fragile entities actually benefit in times of stress or volatility. For instance, they could buy options on stock market volatility — with the downside limited to the option cost and the upside unlimited.

Insurers, and particularly reinsurers, are intrinsically fragile entities because they exist to offer assistance with a limited downside. Taleb notes that insurance contracts have the opposite payoff, with the upside limited to their premiums and a large potential downside. He cites how "one single episode [asbestos] bankrupted families of Lloyd's underwriters and lost incomes made over generations."

He also points out, however, one upside of insurance: The best reinsurers actually make money from their risk management mistakes because typically, after a tail event, reinsurance is overpriced. The trick, as Taleb describes it, is for insurers to "keep their mistakes small enough to survive them."

This idea was voiced by Warren Buffett in 2001 following the World Trade Center attack, when he said an insurer should "limit the business accepted in a manner that guarantees you will suffer no aggregation of losses from a single event or from related events that will threaten your solvency."

CROs can do the following:

- Ensure that underwriting risk management practices are robust so that safeguards such as named perils and limited reinstatements are rigorously enforced in hard markets, and not replaced in soft markets with unlimited coverage for multiple losses or any perils.
- Concentrate on older-fashioned limit measures, such as maximum foreseeable losses or even total aggregate exposures by zone/peril, alongside the more detailed probabilistic output of catastrophe models. These should be considered on a gross as well as net basis (assuming an associated counterparty risk failure). Although still susceptible to black swan events, these are more robust measures.
- Ensure there is a robust source of contingent capital, contingent only on a financial impact and not on a named event, so they can take immediate advantage of the post-event market dislocation.

Planning Fallacy and Related Biases

Kahneman and Tversky also identified planning fallacy, a key bias in which plans are unrealistically close to best-case scenarios and significantly underestimate the likelihood or potential scale of failure.

Kahneman identifies reference class forecasting as a counter to planning fallacy, that is, accessing a wide source of information about outcomes of similar projects, including from external sources. Insurers can make use of market and external benchmarks, and external advice.

There are two related biases that can both cause and aggravate the planning fallacy:

- Anchor bias can anchor an initially overoptimistic plan when considering risks.
- Overconfidence and the illusion of control: Both in explaining the past and when considering the future, individuals are prone to dismiss poor performance or outcomes as one-time bad luck and to attribute good performance to skill. These illusions, along with planning fallacy, manifest optimism bias.

Both of these biases are readily observed when developing business plans:

- Business plans can often anchor initial financial results and even reserves over a period of time.
- Likely future results are often assessed using an as-if version of historical results that explicitly identifies past instances of poor performance as one-time events, and so they are removed from historical records.
- Market outperformance, even over a short time period, is explained as a systematic and repeatable underwriting feature.

They are also much harder to overcome without training and increased awareness using tools such as a premortem (see sidebar, page 10).

Managing Biases

When developing a capital model, one of the most important and often neglected risks is model risk. Model risk is the meta risk of things going wrong with the model due to largely qualitative factors, for example, reusing an inappropriate old model rather than developing a new one. Insurers that are most advanced in capital modeling understand and mitigate model risk alongside other risks.

Behavioral risk is another meta risk: Even an insurer's risk professionals have behavioral biases that cause an ERM framework not to function as it is supposed to. We have seen great value in firms commissioning an external risk culture survey. A behavioral assessment as part of a wider risk culture survey can reduce behavioral risk, and stakeholder biases that reduce the effectiveness of a firm's ERM framework can be managed and mitigated.

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