



## Behavioural economics and underwriting – how science can back expert judgement

The lifeblood of underwriting is the understanding and prediction of adverse events. Traditionally, an underwriter's work comprises expert data analysis, an alignment with portfolio strategy, and expert judgement. Emerging research findings show that behavioural economics, in turn, can do a lot to augment the robustness of expert judgement and thereby improve underwriting performance.

We interviewed Maura Feddersen, a behavioural economist at Swiss Re, to understand how underwriters are enhancing the accuracy of their predictions by counteracting the effect of cognitive biases. We also discussed where human expert judgement will remain superior to algorithms and where behavioural science is relevant in automated decision making.

### Speakers



**Maura Feddersen**  
Swiss Re  
Behavioural Economist

## Maura, you're a behavioural economist - what does that entail?

Behavioural economists typically draw on a combination of subjects - economics, decision science, psychology, sociology, evolutionary biology - to shed light on how and why we behave as we do. In an insurance context, this is helpful to understand how we make sense of risks and how best to boost our resilience in response to these risks.

As the saying goes, "it's difficult to make predictions, especially about the future". Yet the research suggests it is possible to improve our foresight by applying a specific approach to refine our predictions, and I focus on systematically embedding these best practices in insurance processes.

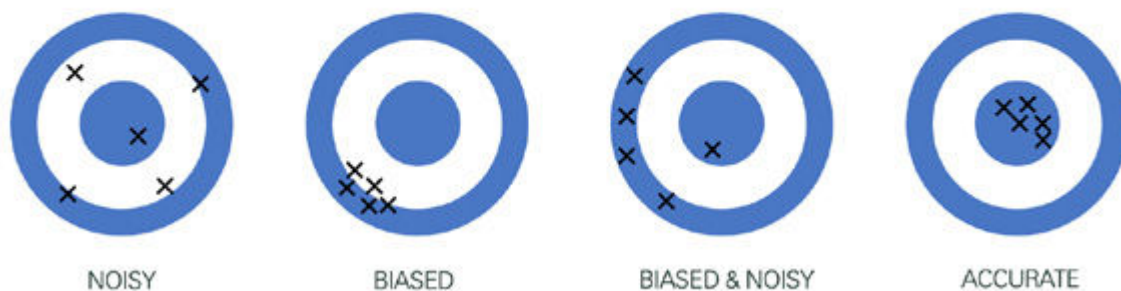
## Why do insurers need behavioural economists?

One reason is that behavioural economists tend to bring 'the voice of the customer'. They place humans at the centre of product development, sales, or any part of the insurance value chain.

Swiss Re has had a behavioural economics capability since 2014, with the team focusing on measurably improving policyholders' experience in interactions with their insurer.

But behavioural economists can also focus on decision-making inside organisations. Expert judgment is essential in developing sound forecasts and decisions, but it is typically fraught with cognitive biases: Experts tend to adjust upwards rather than downwards (optimism bias), are overly influenced by last year's results (anchoring) and neglect the possibility of exponential growth.

Expert judgement is fraught with both noise and bias



Source: Daniel Kahneman, Andrew Rosenfield, Linnea Gandhi, and Tomas Blaser From "Noise", October 2016

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For example, an analysis in one underwriting team showed that although underwriters self-assessed their costing on average to be 5% too conservative, it was in fact 6% too optimistic. Research with another team showed when any two underwriters assessed the same case, their assessments differed by as much as 79%, although underwriters only anticipated divergence of 27%.

Why is this a problem? Simply put, quoting a premium that's too high might mean losing business, while quoting too low, could lead to a profitability problem.

Behavioural economists can put mechanisms and tools in place to counteract this miscalibration and alleviate the cognitive biases at play to improve accuracy in underwriting.

## What are the main biases you have seen in underwriting?

A few biases are problematic for underwriting. Confirmation bias is one example. It means, humans tend to assess the information that confirms their pre-held beliefs. In underwriting, it can mean not picking up on red flags, which is key especially at the re-view stage.

An example of some of the biases in action are detailed below. While being aware of one's own biases is not enough, it is the first step to improving underwriting.

Bias	Description	Bias in action
<b>Confirmation bias</b>	The tendency to perceive and retain information consistent with our pre-existing beliefs	Missing red flags, for example, by not considering enough information sources
<b>Herding</b>	The tendency to follow the crowd without considering our own judgement	Underwriting a deal, because other providers are making a pitch, while not carefully considering whether the deal is attractive in the first place
<b>Anchoring</b>	The tendency to rely too heavily on the first piece of information available	Agreeing with a model view, rather than applying appropriate overlays
<b>Framing</b>	Our choices are influenced by how they are framed - wording used, settings, situations	Changing our view of the riskiness of a location because of how risks are conveyed, e.g. 1/100 year event vs 39% chance over 50 years
<b>Optimism bias</b>	Our tendency to believe we are more likely to experience positive rather than negative events	Underwriting a deal where the client has committed to but not yet implemented flood defences

Source: Swiss Re Institute, Behavioural Research Unit

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## How can behavioural economists improve underwriting performance?

One of the most effective tools underwriters can use is to assess the accuracy of their past predictions. A casualty underwriter might ask themselves, how accurate was I when I predicted average premiums in the German motor market in 2021, and why? Assessing the value of the information and methods used to produce our forecasts and linking these to forecasting accuracy means we can determine what aspects of the process reliably improve accuracy, while subtracting those which don't. This does not need to be labour-intensive if it's built into processes.

Some forecasts do not allow us to 'close the feedback loop' to learn from what works and what doesn't. They could be long range forecasts or once-off forecasts, for example, the prospective cost of a legal settlement in 15 years for a product design error incurred today. Fortunately, there's an increasingly large body of evidence that has shown which methods reliably improve prediction accuracy.

Swiss Re has been putting in place best-practice methodologies for individuals and groups to structure how they develop expert judgement, while also giving individualised feedback to help experts enhance forecasting performance.

## Can you explain these best practices in more detail

We think that underwriters get a valuable edge when plotting the future if they use simple models, step-by-step methodologies for developing expert judgement all backed by behavioural and decision science.

As a result, Swiss Re started a pilot back in 2018 and has since rolled out a 7-step approach to expert judgement in underwriting, which consistently improves forecasting accuracy, in some cases by as much as 70%. We encourage our underwriters to use this approach when making important predictions.

**As we discussed in our recent paper Algorithmic Underwriting in Commercial and Speciality Insurance the need to address cognitive biases is becoming even more important as we move to increasing automation in decision making. How can behavioural economics help with this?**

As humans we are known to be biased – but algorithms are biased too. For example, if an algorithm is built on historic data of hiring or promotion decisions, it's not surprising that the profile of successful candidates is reflective of past biases, rather than the more unbiased future to which an organisation might aspire.

Behavioural economists can perform an auditing function to help in two areas: One is to focus on the process to review whether the data and models used for algorithm-driven decisions are accurate and relevant, rather than shaped by cognitive biases. It's also possible to assess the outputs and ask whether the algorithm-driven decisions behave as designed and intended.

As much as we as humans are biased, it does not mean we should work to remove expert judgement. Research shows that human judgement outperforms machines in high-stakes, high-uncertainty predictions, so human judgement is essential for insurance which centres on anticipating uncertain events. Human judgement also plays a role in spotting and avoiding nonsensical algorithms

## Swiss Re

**Swiss Re** is a reinsurance and insurance provider offering risk management solutions in property & casualty and life & health.

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