

## Change the risk culture, change the risk management capability

Insurers and funds hold capital to withstand stressful events. Holding capital comes at a cost, underlying the importance of getting the most value out of stress testing using scenarios.

Scenario testing can produce rich conversations with management and help change risk culture by making required capital more transparent, rather than being just another number that the actuaries produce.

Consider the following management questions and how being able to refer to a scenario could open up a conversation about key organisational issues:

Management Conversation	Stress Testing Conversation
Do we understand our risk exposures?	<ul style="list-style-type: none"> <li>In which scenarios do we perform relatively well or poorly?</li> <li>What are the drivers that help us perform well in some scenarios but worse in others?</li> </ul>
How can you role play scenarios?	<ul style="list-style-type: none"> <li>What management and Board actions need to be triggered under each scenario?</li> <li>Who is responsible for these actions?</li> <li>How will we know what scenario is unfolding?</li> </ul>
How effective is our decision making under stress?	<ul style="list-style-type: none"> <li>Can we use scenarios to rehearse otherwise 'unthinkable' decisions?</li> <li>How can we improve the speed of our real life decision-making by using scenarios?</li> </ul>
How can we manage our economic capital more effectively?	<ul style="list-style-type: none"> <li>In which stresses is capital the key to survival?</li> <li>Are there stresses where capital is dissipated for no business value?</li> <li>What are the implications for capital management?</li> <li>What is the capital management plan in effect during a scenario?</li> <li>How is economic capital modelled under each scenario?</li> </ul>
How can we understand and better allow for the risks in a new product?	<ul style="list-style-type: none"> <li>How might a new product perform under a scenario?</li> <li>What are the features of the product that help it perform well in some scenarios but worse in others?</li> </ul>
How can we better communicate to stakeholders stresses that arise from time to time?	<ul style="list-style-type: none"> <li>What should be communicated to stakeholders under each scenario?</li> <li>How should negative news be communicated?</li> <li>Who is responsible for developing and delivering the key messages?</li> <li>How should we communicate to external stakeholders?</li> </ul>
What metrics are most important for management to monitor on a regular basis?	<ul style="list-style-type: none"> <li>What metrics are potentially lead indicators of risk for each scenario?</li> <li>What levels of metrics trigger what types of management actions?</li> <li>Does management have the right tools to understand and communicate its risk appetite to the rest of the organisation and to the Board?</li> </ul>
How can we better articulate our risk appetite?	<ul style="list-style-type: none"> <li>Which scenarios would the Board want to survive?</li> </ul>

## Tap our expertise

Over the years a number of clients have tapped into our creativity, industry expertise and experience to help them with stress testing and scenario development and analysis.

Here are some examples of how we have helped clients:

- We helped a large life insurer to define their stress and scenario testing requirements of the APRA Level 3 Conglomerate regulations (Intra Group and Aggregate risk exposure). As a result we helped the insurer re-assess their capital management needs at a conglomerate level
- We helped a superannuation service provider to understand their capital and insurance needs, by stress testing their business operations. We worked with their business and risk representatives to develop a series of scenarios of extreme operational loss events covering areas such as fraud, unit pricing and business continuity. Not only did this assist with capital and insurance needs, but also identified areas where improvements to controls may be warranted
- We helped a national health insurance scheme in Asia assess their reinsurance needs in the event of a pandemic. As a result, we also helped them clarify the responsibilities and governance between different ministerial departments and statutory organisations with respect to the insurance scheme
- We helped a Big 4 bank review the outcomes of an industry stress testing exercise. As a result, we helped them identify enhancements to data transition, data processing, and their portfolio segmentation approach for management reporting
- We ran a two hour Board session 'war games' for one of Australia's largest general insurers to help them refine their risk appetite framework and test their management actions in times of stress.

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## Realising value from Scenario Testing



## What do we mean by scenario testing?

Let's define our terms. 'Stress testing' is a broad term covering ways of measuring the impact of stressful events. 'Scenario testing' is one way to carry out a stress test.

Stress testing is the projection of an organisation's financial state in adverse situations. Insurers and financial institutions carry out stress tests to assess the adequacy of capital levels. Superannuation funds also consider stress testing when setting their risk management framework.

There are a number of ways that companies can carry out stress tests. On the one hand, stochastic approaches are commonly used, where independent variables such as interest rates and claims levels are randomly selected from assumed underlying statistical distributions, and a large number of simulations carried out. On the other hand, explicitly defined scenarios can be developed and the impact assessed without recourse to statistical models.

Even when a company carries out stochastic capital modelling, an explicitly defined scenario can help sense check the output of the capital model, and is more tangible than the output of a statistical black box. It is a lot more concrete to be able to say 'our capital is at a level that we could survive an event four times as bad as the great depression' than 'our model says we can survive a 1 in 250 year event' especially given the difficulty defining what is a '1 in 250 year event'. This approach enables Board participation in assessing appropriateness of target capital levels, which is a requirement under APRA's ICAAP regime.

It can be difficult to understand the assumptions and methodologies underlying complex stochastic models. Keynes described economic modelling as a 'contraption proceeding from premises which are not stated with precision to conclusions which have no clear application. 'The relationship between the assumptions in a capital model and real world remain problematic. The limitations were borne out in the global financial crisis, which was catalysed by over-reliance on complex models that were the basis of portfolios of sub-prime U.S. housing assets being rated AAA. On the other hand, scenario testing allows us to explicitly define what we want to be able to withstand.

We believe there are distinct advantages to scenario testing that adds value to organisation that are not commonly identified. This Point of View discusses scenario testing as a tangible alternative to stochastic stress testing, and crucially how to get the most value out of it.

## Think the unthinkable

These are the words of Herman Kahn, a military strategist for the U.S. during the Cold War. Kahn encouraged people to 'think the unthinkable' and in particular the brutal consequences of a nuclear war. Kahn's insights were derived from thinking about different scenarios and their implications. By articulating different scenarios, he was able to bring into stark reality what was at stake.

But how does one come up with a scenario that is 'unthinkable'? Is there really such a thing as a scenario that is 'unthinkable'? If we had asked the banking sector to come up with an 'unthinkable' scenario prior to the sub-prime lending crisis, would that scenario or similar have come up?

As humans, we are hardwired to look for patterns and programmed to expect the future to resemble the past. Thinking the 'unthinkable' may be more difficult than it sounds.

There is also the danger of 'groupthink'. The organisational and power structure, and the tendency to recruit others with a broadly similar outlook, can also be an inhibitor to building the 'unthinkable' scenario. Groupthink can also be pervasive across an industry.

So how can you overcome these challenges and design a scenario that pushes your conventional wisdom? Here are a few suggestions:

- Construct a scenario by engaging a variety of stakeholders of different backgrounds. These people do not have to be limited to people in your organisation or even in your industry. They could be actuaries from an adjacent industry; they could be experts and strategists from a completely different sector
- Construct a scenario that is plausible, not probable. This can help avoid the 'groupthink' temptation to summarily dismiss a scenario as 'academic'
- Use a process for constructing a scenario that allows quieter individuals a 'safe haven' for contrarian thinking.

## Reverse stress testing

Another way to think of an 'unthinkable' scenario is to ask; what would it take to cause my organisation to become unviable?

This is also known as reverse stress testing and can be done using scenarios. Reverse stress testing starts from an outcome of business failure and identifies circumstances where this might occur. To make it tangible, and to engage a variety of stakeholders, building a scenario around these circumstances with a corresponding narrative can help bring the scenario to life. To engage stakeholders, a reverse stress test scenario should be plausible and be linked to trigger levels for management actions.

Beyond the impact on capital requirements, reverse stress testing is also a risk management tool. Reverse stress testing can help identify issues such as risk concentrations that may affect the alignment of a firm's business strategy and its risk appetite. Reverse stress-testing can help an organisation consider and document the interaction between business failure and its stated risk appetite.

## Bringing scenarios to life

Part of an organisation's risk management tool kit is the experience obtained from having rehearsed a stress scenario. Numerous academic studies indicate that people react and make decisions differently in a stressful situation. This could be due to confusion over how to interpret the situation, failure to gather the right kind of information, and once a decision is made individuals respond well to a leader but if the leadership is lacking, people will become confused.

Just as fire fighters rehearse their response to an emergency, so should management rehearse and 'live' through a stress scenario.

There is much more to bringing a scenario to life than just conducting a workshop. Here are some other considerations:

- Add numbers to the narrative. Quantitative analyses can help engage stakeholders and give the scenario 'plausibility'
- Use material such as fictional newspaper articles, press releases, made up email correspondence as part of the narrative
- Use subject matter experts that can tell the story with richer detail
- Make the end goal clear to participants.

## Outcomes... a checklist

At the end of scenario testing, your organisation should have:

- Determined realistic management actions, timing of these actions and what secondary impact these actions may have on business as usual
- Revised the Risk Appetite Statement to better capture the amount and type of risks that your organisation is comfortable taking
- Tested whether there are implied assumptions that may no longer hold. Do some 'constants' become 'variable' under the scenario? If they do become variable, do they become variable right away or is there a time lag? This also helps your management identify risk drivers that they should be monitoring.
- Reflected on the refined risk appetite in the risk management framework through a better understanding of your organisation's risk taking boundaries
- Revised the Capital Management Plan and Investment Strategy to give a better risk-return trade-off for your organisation's needs
- Ensured your Corporate Strategy is aligned to the risk return profile defined by its risk appetite
- Developed a Stress Recovery Plan including key Board and Management Actions, identify action owners and prioritise options
- Identified areas to monitor and how to make the most of its Management Reporting and Business Intelligence functions
- Developed a Living Will – a going concern plan for the scenario when recovery is not possible
- Built a stronger relationship with the regulator by being better able to anticipate their point of view
- Planned for scenarios that may not be easily quantifiable e.g. operational risk events
- Identified areas for further research and analysis.

## See the unforeseen

This is a mindset that we bring to our clients, and is particularly relevant to realising value from stress testing using the development of scenarios. Tasks we could help you with include:

- Facilitating workshops with stakeholders to construct and articulate scenarios
- Imagining and constructing scenarios beyond the typical generic scenarios
- Assisting with modelling to calculate the impacts of scenarios
- Benchmarking against what other regulators have implemented e.g. Swiss Solvency Test, UK Anchor scenario
- Looking at your business plans and forming views on what scenarios could ruin it
- Looking at the impact of stress testing and scenario analysis for capital management, risk management and management reporting
- Helping you enhance your recovery plans and living wills.