Actuarial Risk Management
Global Actuarial Consultancy

Strategies & Risk Solutions for Executives
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To Our Subscribers

We want to thank our new subscribers and welcome everyone to the seventh issue of the ARM quarterly newsletter! During the past 3 months, our list of subscribers has grown past 300! We hope that you all find this publication valuable. With a few short articles meant to provide unique insights, we present ideas about how to address specific problems and introduce potential risks and opportunities that may not yet be on your radar.

The primary authors are Dave Ingram and Max Rudolph. We have been active participants in the risk management, actuarial, investment and insurance spaces for many years.

Subscribers are encouraged to suggest topics for articles and ask questions of the authors during our follow-up webinars and podcasts. Ever cognizant of regulatory requirements, leveraging them to add value to your company in practical ways, will be our focus.

Published by Actuarial Risk Management (ARM), the Strategic and Risk Solutions for Executives (SRSE) subscription is free to all.

A free webcast is also available and our podcasts covering these topics is called Crossing Thin Ice. If you would like to further engage the authors as consultants or for continuing education purposes, please reach out. More info can be found throughout this newsletter. We hope to help you find a solution that meets your needs!

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The content of this newsletter is meant to be educational and thought provoking. Nothing in it should be interpreted as investment advice.

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Interactions between Risks:
Implications for Building Scenarios

Modelers historically have focused on one assumption at a time. Interest rates, claims, defaults and expenses are all important, but other risks also play a part in narrative scenarios that describe where the world may be heading.

These include environmental (e.g., climate, seismic), technological (e.g., Artificial Intelligence, grid connectivity), geopolitical (e.g., wars, globalization), societal (e.g., pandemics, demographics) and economic (e.g., volatility, ramifications from chaos within a country). A company also has operational risks that have financial implications. Qualitatively assessing combinations of these risks will lead back to quantitative financial scenarios.

Statisticians talk about correlations, and threat multipliers like climate change and war consider interactions between multiple risks. For example, climate change makes fresh water more scarce and thus more valuable. This leads to regional conflicts to control water and other resources, reducing GDP and demand with potentially lower real interest rates or accelerating inflation, higher claims and lower fertility. The idea is to be creative – what could go wrong and how would that impact a specific block of business.

Statutory accounting assumes that policyholders take advantage of options when it is in their best interest. For example, surrenders are typically the worst case for an insurer (but not always). This is useful information for a company to know.

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Interaction between Risks (cont'd)

What follows are three examples to demonstrate the concept.

Geopolitical Scenario: Taiwan invasion

Scenarios are meant to be a learning experience to develop tactics, not a prediction. This one is interesting as it highlights geopolitical concerns that cross over into other risk categories.

Narrative scenario: Taiwan is threatened, then invaded, by its neighbor China. China is concerned that it could be blockaded from ocean access for purposes of trade or defense. China utilizes cyber warfare along with air and navy. China is demographically challenged and has a high youth unemployment rate. It has allied with countries that can provide their oil needs. Taiwan's allies come to its aid, despite a growing isolationist movement in the United States, but stocks of weapons have been depleted from the war in Ukraine. The battle stalemates after Taiwan's semi-conductor industry is destroyed, leaving the country a shell of its former self and both China and Taiwan in a deep recession.

Financial assumptions: The initial concern for insurers is the impact on interest rates and yields. Global economic growth would adjust but initially is likely to fall, with lower earnings and disinflation and potential deflation. Infrastructure would be damaged, including undersea communications and satellites. Naval warships seem especially vulnerable. The Ukraine War has demonstrated how war is a high stakes game of evolution, with each side continuously reacting to tactical changes by opponents. How will this impact sales and renewals as pricing becomes volatile? How will the economy adjust to a lack of microchips? Each insurer will be unique.

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Interaction between Risks (cont'd)

Watch out for: Do you have concentrated positions in certain asset classes, regional exposures, similar maturity dates or liquidity concerns? Is the continental US at risk of a direct attack?

Financial Scenario: Low Interest Rates

Narrative scenario: In early 2022 the Fed had driven interest rates very low but their own stress tests did not consider what would happen if they returned to typical levels.

Silicon Valley Bank (SVB) was susceptible to this scenario due to a combination of deposits above FDIC limits and a recent influx of funds and investments made during this period of low rates, but did little to mitigate the risk. Be sure to learn from the lesson of the banks – what assumptions are being modeled based on historical data rather than specific options granted to customers (in this case surrender). Don't count on a bailout.

Financial assumptions: Regulatory life insurance rules require dynamic lapse assumptions interacting with interest rate changes. For all insurers one stress test should always be to assume no diversification benefit (100% correlation). Another would look at developing assumptions from first principles to see if something that's "always been done this way" should be updated due to the current environment.

Watch out for: SVB and other California banks had the unique circumstances that funding for venture capital type firms had been plentiful during the period of low interest rates. Banks were eager to put the money to work but ignored the unique risks they had accepted, namely that deposits could be withdrawn at any time without penalty and that corporations had left large amounts on deposit, well beyond the guarantees set by the FDIC. Each situation is unique and cookie cutter solutions should be viewed with skepticism.

Climate change: Infrastructure

Public infrastructure developed during a period of globalization is very susceptible when the process is unwound and conflicts replace open trade borders. Risk increases.

A warmer planet drives extreme weather events that destroy infrastructure and adaptation requirements (e.g., to keep out higher sea levels) that build new infrastructure. Demographic reductions in fertility and migration concentrates the price on fewer taxpayers.

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Interaction between Risks (cont'd)

Narrative scenario: Money spent on infrastructure means those funds are not available for socially beneficial projects tied to health and education, reducing levels of economic growth. Socioeconomic inequality and food insecurity become strained, leading to disinflation and stressed claims.

Financial assumptions: Growth is likely to slow. Investment yields may increase but only because defaults, liquidity and other risks have increased as well. The market often reflects these higher yields before historical data confirms their accuracy.

Watch out for: Greenhouse gas levels, sea level rise and demographics are impossible to control by any one group so modelers should consider a variety of potential outcomes as the IPCC scenarios do.

Conclusion

It is important that experience is stable over the pricing time horizon. A product like health or auto insurance has very short-term cash flows since it is repriced each year, while a structured settlement or policy backing asbestos claims may have a lifetime of a half century or longer. The additional uncertainty needs to be considered when pricing the product. Risks like climate change and demographics destabilize assumptions over many years, often in surprising ways as risks interact.

The maximum pricing time horizon is driven by liabilities if the portfolio is closely matched from an ALM perspective. Products may need to be redesigned with shorter guarantees if insurers want to avoid reliving previous Long Term Care experience with products tied to behaviors and interest rates that were unstable over periods of long time horizon guarantees. The world is changing at a quickening pace – products should be reviewed if they are no longer sustainable over their pricing time horizon.

Modelers need to go beyond interest rate and inflation scenarios when building the stories behind narrative scenarios, then convert likely outcomes back to quantitative model assumptions to aid tactical and strategic planning efforts.

Sign up for the associated September 13 webcast

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Strategies & Risk Solutions for Executives

Now providing three ways for you to get insights, strategies and solutions from ARM consultants to help resolve your risk issues.

Newsletter

- 3 to 6 articles quarterly
- Written by Dave Ingram, Max Rudolph and other ARM consultants focusing on risks faced by insurers and risk management strategies
- Available on the ARM website

Webcast

- One-hour live webcast once each quarter following the newsletter publication
- Webcast includes brief presentations, interviews with authors and live Q&A with your questions answered regarding the newsletter topics

Podcasts

- Two per month
- Delivered by Dave Ingram & Max Rudolph
- Presenting material from the newsletters and webcasts in a totally audio format.
- Available wherever you usually download podcasts

* No charge for subscriptions to ay of the three services

> "While insurers have been challenged by low interest rates and the pandemic, the next few years will see a radically changing environment for insurers. We will be using this provocative platform to identify emerging risks and delve into what we see as the drivers of future success."

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