



# From 9/11 to COVID-19: The Unthinkables Essay

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Actuaries tend to prefer quantitative over qualitative analysis, but this creates a process where you need to be careful not to miss the forest for the trees. What really matters? My time horizon is longer than others, but patience is of little interest to corporations. A study note was created from my pandemic paper in 2004.<sup>1</sup> Other research projects discussed low interest rates in 2014<sup>2</sup> and low economic growth in 2019,<sup>3</sup> along with the annual emerging risk survey since 2008.<sup>4</sup> I think a lot about risks that others consider too remote to plan for.

This past year I was the junior partner on a paper with Dr. Guntram Werther. He detailed foresight methods that allow experienced practitioners to outthink others, while I discussed what it means for actuaries.<sup>5</sup> For those with patience, thinking about the unthinkableables provides a competitive advantage.

This doesn't mean that every risk considered will happen. Potential risks can be anticipated, but not with accuracy. And some unanticipated risk events will occur. Planning will reduce or eliminate some with mitigation strategies and some won't reach far enough into the tail to threaten disruption.

There are several ways to think about risk in new ways. Let's explore them!

### HOLISTIC THINKING

Most analysts think only about how the risk will impact their immediate needs. A recession causes economic growth to stall. But higher order effects of interactions are also important. For example, an economic slowdown interacts with many other risks. These potentially include a stock market crash, likely lower interest rates, excess supply leading to a fall in commodity prices, higher unemployment and lower tax collections. How these interactions impact the aggregate risk of an entity is what matters for solvency.

### RISK INTERACTIONS

The Department of Defense coins many terms. Many are confusing and lead to a vocabulary only they can understand, but threat multiplier is one that risk managers should be aware of. Climate change is a good example. It interacts with many other risks, making immigration policy much more important, limits fresh water access and makes regional conflict more likely. The cost to adapt, mitigate and repair will each slow economic growth and lead to a continuing cycle and potential death spiral.

### STARTING OUT BEHIND

Many risks can be fixed by throwing money at the problem, enabling engineers or farmers. But we in the developed world have squandered our opportunity to build a piggy bank to smooth out the bumps in the road. Only the Scandinavian countries avoided spending their fossil fuel excesses. Several countries need a high price for oil just to balance their annual budgets. The high levels of debt to GDP are above those that have historically caused a

<sup>1</sup> Rudolph, Max J. *Influenza Pandemics: Are we ready for the next one? What actuaries can learn from 1918*. SOA Risk Management Newsletter. July 2004. Issue No. 2. <https://www.soa.org/globalassets/assets/library/newsletters/risk-management-newsletter/2004/july/rmn0407.pdf>

<sup>2</sup> Rudolph, Max J. *Sustained Low Interest Rate Environment: Can it Continue? Why it Matters*. Risk Management Newsletter March 2015 – Issue 32. <https://www.soa.org/globalassets/assets/library/newsletters/risk-management-newsletter/2015/march/jrm-2015-iss32-rudolph.pdf>. The research paper can be found at <https://www.soa.org/resources/research-reports/2014/research-2014-sustained-low-interest/>.

<sup>3</sup> Rudolph, Max J. *Economic Growth Prospects – Are We Being Honest with Ourselves? Risks & Rewards*. March 2021. and Alberts, Mark and Rudolph, Max. *A Low Growth World: Implications for the Insurance Industry and Pension Plans*. Society of Actuaries. June 2019.

<sup>4</sup> <https://www.soa.org/resources/research-reports/2021/14th-annual-survey/>

<sup>5</sup> Werther, Dr. Guntram and Rudolph, Max. *Resurrecting the White Swan Mindset. How Much more can be Forecast?* Society of Actuaries. August 2021. <https://www.soa.org/resources/research-reports/2021/resurrecting-white-swan/>

country's currency to fail.<sup>6</sup> What may be different this time is the number of countries that have decided Modern Monetary Theory is politically expedient. No one is acting as the adult in the room, so it will continue until it doesn't. As Hemingway noted in *The Sun Also Rises*, the route to bankruptcy is "Gradually, then suddenly."

There is little resilience built into today's financial system. Nassim Taleb calls it fragility,<sup>7</sup> as complex systems move toward the breaking point. There are many unintended consequences of actions, and the more complex a system is the more there is to worry about.

## INDEPENDENCE

Historically, actuarial work has relied on the law of large numbers covering independent events. Unfortunately, many of the insurance products sold today are tied to assets under management (AUM) that are systemically risky. Financial market correlations are not stable, and unknown known assumptions produce historical data that is not predictive. As we saw in the Great Financial Crisis of 2008, when the s\*\*t hits the fan, all correlations go to one. In today's environment, if you price for independence you should also overlay an aggregated hedging strategy based on risk appetite and cluster analysis. Create scenarios and rank the ones with the worst outcomes. Determine how many events must happen before you become insolvent and hedge or partially hedge them. This is called cluster analysis and is built around a cluster of independent events happening at the same time. For example, during a recession what if there is a major earthquake or hurricane at the same time? In 2020 the world was lucky the pandemic was not joined by a major financial event.


Insurers that became dependent on AUM for profitability encountered a systemic risk. In 2008 those backing variable annuities with mutual funds written by subsidiaries took a double hit when markets fell as GAAP assumptions unlocked at the very time claims were expected to be high.

## METRIC MANIPULATION

Metrics that are known in advance can be manipulated through hedging strategies that work well at key regulatory points, like VaR95, but viewing a graph of the results makes it obvious that the solution is fabricated and does not protect the firm in other scenarios. By stress testing scenarios that lead to insolvency, an entity can hedge those risks or decide not to accept them where these complex adaptive systems are fragile. Risk managers can't plead ignorance and say the risk was unthinkable. Continuing education and looking outside your usual relationships to find honest risk managers who make you feel uncomfortable at times, are the key to long run success.


## CONCLUSION

Risk managers who build resilience into their business and stress test for fragility and solvency are more likely to have their firms survive during extreme tail events. Helping management teams consider unthinkable events or clusters of tail events is a key part of a successful strategy.



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<sup>6</sup> Reinhart, Carmen M. and Rogoff, Kenneth S. *This Time is Different: Eight Centuries of Financial Folly*. Princeton University Press. 2009.

<sup>7</sup> Taleb, Nassim. *Antifragile: Things that gain from Disorder*. Random House. 2012.

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