

Interview: Roland Kupers on Risk for Long-Term Investors

FORMER SHELL EXECUTIVE & COMPLEX SYSTEMS EXPERT

Investors often face a challenge of meeting long-term obligations and maintaining the support of their constituents along the way. In particular, they need investment strategies to meet their long-term obligations, but current risk communications, behaviors, and measurements can interfere.

FCLTGlobal, with its Members, is developing practical tools to address the issue of balancing long- and short-term risks. Part of the process includes interviews with experts in the area of assessing, managing, and planning for investment risk. Below is

the first in a series of discussions, featuring Dr. Roland Kupers, Co-founder and Managing Director of [NewEconomicMetrics](#).



FCLTGlobal: Thank you for participating in this discussion. Let’s begin with a high-level question. To what extent does the way that an organization measures risk affect its ability to fulfill its purpose and think in the long term?

Kupers: Part of the issue is hidden in the words “measure risk.” You don’t actually measure risk. We use this language to imply more knowledge than we actually have. We really just estimate risk, and the critical thing is figuring out the limits of our knowledge.

Since the Enlightenment in the 18th century, we have increasingly convinced ourselves that in principle everything is knowable, if only we can get enough data, but that is incorrect in many relevant situations.

Clearly some things in the future can be extrapolated from the past, but many cannot. Do you have the ability to distinguish between the two? Telling the two apart is important because different categories of risk need different management approaches. One category of risk is extrapolated from the past and can be reasonably estimated based on historic data, the other category not, as that is where the black swans live (or fat tails for the more mathematically inclined).

Fundamentally this category corresponds to things that elude direct prediction. It does not mean you cannot manage those risks, but there is a different set of tools for them.

FCLTGlobal: Could you explain what these alternate ways of managing risk are?

Kupers: Complex systems, such as for example stock markets, are characterized by so-called fat-tailed distributions, which basically means that there are extreme events that occur only rarely. These very large events are more relevant in a long-term view, although they could happen at any time.

“Probabilities can only be defined for normal distributions, not fat-tailed distributions. For fat-tailed distributions, investors need to evaluate the resilience of the system as a risk management approach. Evaluating the resilience of a system, like an investment organization, focuses

The real problem is that probabilities can only be defined for normal distributions, not for fat-tailed distributions. In statistical terms, the potential outcomes within these systems are uncertain – their probability is not defined. For fat-tailed distributions, investors need to look at the resilience of the system as a risk management strategy, since you cannot quantify the risk estimate as required in the familiar impact/probability tools.

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Managing the resilience of a system does not pretend to anticipate the future. Instead, it focuses attention on the organization's fitness for handling irreducible uncertainty.

Another technique is scenario planning, which started developing in the 1960s to help deal with unknowable and unmeasurable risks. New tools were developed to shape the strategic conversation about uncertainty. For example Shell has sustained this approach for more than half a century, refining and adapting its approach with the times.

FCLTGlobal: FCLTGlobal's research addresses long-term risk behavior particularly at the trustee level, an oversight level. What do you wish the trustees of long-term investment organizations knew about the way that risk is estimated for them?

Kupers: I think it is understanding the difference between those two categories of risk. Some systems have normalized distributions and others not. You need to understand the difference between the two and demand that management treats them accordingly.

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Let me give an example. A journalist asked John Browne at the time when he led BP whether the firm was a complex or complicated business. He thought about this and was silent for a while, eventually responding that the oil business is a complicated but not a complex business. The core business is exploration following well-understood risk patterns, managing largely independent assets and selling into a liquid market. The implication is that it

could be managed more or less top-down, considering normal risk distributions. The point is that the trustees should be able to ask these kinds of questions and the managers should be able to answer them.

FCLTGlobal: Do investors need to use these different tools simultaneously, or is it possible to know when one applies more than the other?

Kupers: My recommendation is to use them in parallel. To be very practical, if you are scheduling your risk management meeting, have one hour on normalized risks and one hour on non-normalized risks. The triage is not that hard to do. The bigger danger is trying to force fit one into the other. A few years ago in collaboration with Swiss Re, I developed and tested such tools with risk managers. These are available for use.

FCLTGlobal: You mentioned these non-normalized distributions that make better accounting of fat-tailed phenomena. Are investors' behaviors in these rare events more about psychology than mathematics or statistics?

Kupers: The long-term concerns of investors and of management are quite different problems. Extensive research shows that fund managers struggle to perform better than random. There are some agent-based models that plausibly show how investors react to sudden events and how this leads to the formation of bubbles and crashes. It appears this is more about psychology than economics, although it can increasingly be understood statistically.

Investors clearly do not behave in the perfectly rational way as economists have assumed that in the past. The flipside is that they are not totally unpredictable either. Behavior largely follows patterns, even though those patterns are a little bit more complicated than economists assumed in the past.

Adjusting these methods for estimating risk does not mean that you get to perfection, but it does get us much further than the baseline of assuming perfect rationality and normalized risk distributions always.

FCLTGlobal: If organizations make the type of changes that you described for estimating or engaging with risk differently, how does it help? Does it result in the organization becoming more resilient?

Kupers: I think so. You are navigating highly uncertain scenarios, and it will help you build a more adaptive strategy.

FCLTGlobal: This brings agent-based modeling to my mind. What are your thoughts on that way of estimating risk relative to others that we have discussed?

Kupers: Agent-based modeling is at the cutting edge of science, and it is still in the early days. I think we are far from being able to simulate a real-world system in a way that's useful. My preference for now is to use simple agent-based models to gain insights into the core dynamics of a system – rather than attempting to model the thing itself.

FCLTGlobal: Thank you for sharing these insights with us. Your points are very well taken, and we expect to encompass them explicitly in a publication, forthcoming this fall, on risk for long-term investors.

Dr. Roland Kupers is Co-founder and Managing Director of NewEconomicMetrics, a visiting scholar at University of Amsterdam and Singapore Management University, and an independent consultant. He worked at Royal Dutch Shell for eleven years, spending the majority of this time as Vice President of global liquified natural gas, and it was at Shell that Dr. Kupers became closely involved in scenario planning. Dr. Kupers graduated in theoretical physics from the University of Groningen and much later wrote a PhD thesis on complexity, policy and management.

If you are interested in learning more about FCLTGlobal's research on risk management, please contact Matt Leatherman at matthew.leatherman@FCLTGlobal.org.



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