



RISK MANAGEMENT RESEARCH IMPERATIVES

The actuarial profession is aligning itself towards enterprise risk management (ERM), both in North America and around the world. This is unquestionably the right way to proceed, for ERM is not a fad, but the emerging science of a well-run company. The development of ERM in a firm parallels the core capabilities of a complex organism: information on external environment (via senses) and internal conditions; a processing center receiving reliable, timely and accurate information; an evaluation framework to decide upon action and response; a motor system to effect those actions and responses; and an overarching feedback system to ensure stability and sustainability. When viewed in this light, ERM can be seen as nothing less than the natural evolution of human systems and collectives. Borrowing from Tolstoy: “What then must we do?”

From a research standpoint, the needs are nothing short of critical. The first priorities should be to shore up the fundamentals, and build the foundation of ERM. This should include:

- Framing of traditional practice areas as ERM for insurance, retirement, and benefit systems;
- Establishing parallels between traditional practice areas and broader financial services risk management;
- Conducting joint research across the traditional practice areas, to build the actuarial core of risk analytics; and
- Conducting joint research across all industries, to develop the industry-neutral core of risk analytics.

While far from simple, these priorities can be addressed using traditional research approaches. The main challenges facing the actuarial profession in this space are logistical—coordination and communication.

What I will spend the remainder of this editorial discussing are what might be called the “second-story” priorities which may require a next generation evolution in research approach. The four areas I will focus on are:

1. Strategic Interaction Effects
2. Liquidity Risk

3. Operational Risk
4. Value Demonstration

STRATEGIC INTERACTION EFFECTS

Scientists are realizing that collective systems exhibit interaction effects that cannot be predicted from the behavior of the individual elements. J. Doyne Farmer, Santa Fe Institute, has published several papers showing that capital market price volatility can in part be explained by the interaction of competing trading strategies among different types of traders (Farmer and Joshi 2002). Avinash Persaud,¹ Gresham College, has written repeatedly on the paradoxical impact of market-sensitive risk management policies on banking system stability. His premise, “Introduction of market-based risk based capital requirements leads to uniformity of risk appetite among participants, and therefore uniformity of response to market volatility.” The uniformity compounds and reinforces itself as participants react to each other’s reactions, leading to market crisis. Applying similar logic to the insurance market, it is likely that strategic interaction plays a material role in insurance pricing cycles.

When studying such systems, researchers must be wary not to extrapolate incorrectly from local conditions. These systems are nonlinear and the strategy assessment is multilateral, not unilateral. Theories and policy recommendations may only be tested using non-traditional scientific approaches and media. Examples include simulated economies and agent-based models. Possible worthwhile research goals include: strategy robustness testing—which plan works best, factoring in all the possible things others could do—and policy recommendations—how should regulators monitor and control the system to maximize stability? This is a great opportunity for

¹ “Sending the Herd Off the Cliff Edge: The Disturbing Interaction Between Herding and Market-Sensitive Risk Management Practices.” First Prize Essay on Global Finance, 2000, Institute of International Finance. Available online at www.erisk.com/ResourceCenter/ERM/persaud.pdf.

collaboration outside insurance and retirement systems.

LIQUIDITY RISK

Liquidity is defined as the ability to enter or exit a financial position (i.e., buy or sell an asset or derivative), in the volume needed, at a reasonable price, in the desired timeframe. Failure on any of these fronts is known as a “liquidity crisis” and is symptomatic of market incompleteness and inefficiency. Liquidity crisis are becoming more common in the broader financial markets. One possible cause: liquidity requires diversity of opinion and losers—both of which are in increasingly shorter supply.

Per this definition, one could make the case that insurance cycles are actually liquidity cycles—not only price fluctuates, but also products offered and companies offering them. If insureds cannot secure the coverage they want, in the amounts they want, when they want, from their perspective, the market has failed and there is a liquidity crisis.

Liquidity underlies the effectiveness of any hedging program—it presumes you can find a viable counterparty that can deliver in time. It sounds good in principle, but it is imperative that we acknowledge there are no “outer space beings” at the end of the counterparty rainbow. We are in a closed financial system. Hedging means transfer and, after the hedging stops, at some point the risk comes to rest in someone’s portfolio. This retained risk must be evaluated at some point. The science of that evaluation involves concrete definitions for risk preferences and appetites, and expressions of utility.

Low liquidity valuation—private equity, opaque hedge funds, and real estate—is already an area of tremendous research in broader financial services. We must seize the opportunity to consolidate the risk evaluation framework across other low liquidity products—like most insurance products!

OPERATIONAL RISK

This represents a great opportunity for actuaries. According to the *International Convergence of Capital Measurement and Capital Standards* from the Basel Committee on Banking Supervision,²

² The Basel Committee on Banking Supervision, part of the Bank of International Settlements. More information available online at <http://www.bis.org/bcbs/>.

“Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.”

The opportunities for actuarial contribution are clear. First, casualty insurance for commercial property could be characterized as *insured operational risk*. Also, best practice thinking in the analysis of operational risk is gravitating toward an actuarial approach—exposure bases, driver variables, frequency, severity, correlation, and convolution.³

However, the research challenges are also substantial. Consider the case of a failed insurer. The causes of the failure may include underpricing, under-reserving, uncontrolled growth, or poor management. In the context of The Basel Committee’s definition, these certainly sound like operational risks. The lines between operational risk and underwriting risk, pricing risk, or reserving risk need to be much more clearly defined before insurer ERM can advance.

There are also what are termed *soft operational risks*—management integrity, succession planning, key person risk and knowledge concentration, knowledge management, intellectual property, leadership compensation schemes. These risks arguably outweigh the more quantifiable technical risks, yet the science is in its infancy.

VALUE DEMONSTRATION

This could arguably be the *Holy Grail* of ERM efforts—the creation of tangible value for an organization. In 2003, the Casualty Actuarial Society (CAS) put out a research proposal looking for evidence of ERM value in the capital markets. A preliminary feasibility review found no apparent evidence, and the research project was tabled, for now, anyway. I believe this research effort was merely premature, since looking to the capital markets for evidence of ERM value merely shifts the recognition burden to the capital markets. This presupposes that capital market analysts are already to the point where they can 1) understand ERM programs, 2) quantify their value, and 3) justify pricing companies with ERM programs at a premium. A tall order given the state of the science which we are hoping to help build!

³ See Ali Samad-Khan’s “Why COSO is Flawed,” at www.opriskadvisory.com/articles.html.

Similar conclusions were drawn by the writing team behind the SOA's new textbook *Insurance Industry Mergers and Acquisitions* (see www.soa.org/ccm/content/research-publications/bookstore/books/books-new-titles/). The authors found that valuations are not as scientific as we would like, the perceived value of actuarial involvement in M&A should be elevated, more typical capital market M&A metrics (e.g., earnings multiples, betas) play a large role in insurer valuations, and, many hidden costs of integration (i.e., operational risks) don't get factored into the decision. The bottom line—until M&A uses ERM as a core part of due diligence, the presence or absence of ERM may not drive value decisions. Instead, any apparent ERM value may initially be *asymmetric*—tempering downsides, bad things not happening, granting the benefit of the doubt

in crisis. ERM first may be perceived as a necessity whose absence leads to a price discount, before it is viewed as a strategic advantage whose presence means a price premium.

REFERENCES

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