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***Practical ERM Considerations – From an Insurance Carrier’s Perspective***

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**Executive Summary:**

- The 2008 financial crisis is a seminal event; we are now in the “solution phase” that will have long-term ramifications to insurance regulation and capital formation. The global, federal and state regulatory model is evolving to a more cohesive, and more regulated, structure.
- The Deepwater Horizon disaster has challenged how risk is evaluated and assessed (the “probability of ruin”) and risk is transferred, via insurance. Energy companies will be moving towards more alternative risk vehicles to access reinsurance directly for global risk syndication.
- The financial crisis and Deepwater represent extreme outlier events – extreme severity and low frequency. The systemic nature of risk in a highly correlated financial model contributed to broad failures. Deepwater illustrated inexact risk calibration and the inability to control a broad system failure.
- The irony of the financial crisis is that virtually all of the global financial companies that failed had institutionalized ERM processes – as well as designated Chief Risk Officers (in most cases).
  - What led to their failure?
    - Inadequate risk models (or over-reliance upon the models);
    - Over-reliance upon rating agency credit grades; and
    - Unanticipated risk correlations.
- “Return Periods” – in the insurance world, the probabilities of occurrence, or return periods, critical to manage risk aggregations and net exposures. A company cannot be economically managed to an extreme return period. Thus, there is a risk of changing regulation and risk management processes substantially to address risks from an “extreme outlier” event. Too often, risk management is focused on historical events. It is the unanticipated risk that can cause ruin.

- Extreme volatility is the “new normal”. A Board, or management team, needs to carefully explore what events, or series of events, can lead to failure.
- Beyond traditional “insurance risks”, a company needs to contemplate a variety of macro risks, including:
  - Credit risk
  - Supply chain risk
  - F/X and interest rate risk
  - Control risks
  - Business continuity risks
  - Terrorist exposures.
- ERM corporate governance involves a variety of regulatory compliance issues, and involves rating agencies, and a variety of stakeholders.
- As indicated in the discussion section, an insurance company needs to contemplate a variety of balance sheet and off balance sheet and market risks.

### **Conceptual Discussion:**

The global financial crisis of 2008 and 2009 was a seminal event; these years will be viewed as a meridian of time – much like 1929, 1945, and 1968. In many ways, we are too close to these recent events to fully gauge the long-term impact and lasting effects.

Clearly, the way in which risk is assessed and managed has forever changed and the “solution phase” of the crisis will greatly impact the global financial services industry and the US insurance industry, specifically, for decades to come.

We are only beginning to grasp the long-term effects of new regulations, processes, and reviews that will be required of financial services companies. Risk, and how it is defined and calibrated, is a key focus of the changes that are emerging in a new regulatory model.

The overall failure of the recent financial crisis was a lack of an overall understanding of the systemic impact of highly correlated risks across various risk classes.

Pre-crisis, risks were (or at least it was thought) nicely partitioned into disparate risk classes and, additionally, had further secondary protections to mitigate credit risk. Under financial portfolio theory, which suggests that overall asset risks are lessened through diversification, counterparties and investors widely felt their risks were limited and well defined and understood.

The financial crisis represented an extreme outlier event; a probability event that was very remote in likelihood but extremely severe in its impact. Nassim

Nicholas Taleb, in his book, *The Black Swan* described such high severity, low likelihood outlier events by using the example of the black swan that occurs naturally in Australia. Prior to their discovery in the 16<sup>th</sup> century, however, geneticists postulated that swans could only be white and that any other color combination was simply not genetically possible – thus, the concept was dismissed. Of course, the black swans do, in fact, exist and are representative of those events that reside far down the tail of a probability distribution. This example is representative of an “outlier events”; the financial crisis was such an event.

The financial crisis was a result of broad based market and quantitative failures – the failure of complex risk models; the failure of credit risk ratings to match their predicted failure expectations; the failure of secondary risk controls (such as credit default swaps and derivatives) to lessen initial losses; and the massive degree of risk correlation that became evident from the housing crisis across regions and borrower classes.

Similarly, the April 2010 Deepwater Horizon rig disaster is an example of an extreme outlier event. It will transform how integrated oil companies assess risk and utilize risk transfer vehicles (insurance or reinsurance). The notion of self-insurance of massive potential liabilities, given the size of their respective balance sheets and access to capital, will be challenged by Boards and other stakeholders. It will be another transformative event.

Enterprise Risk Management, or “ERM”, is a term of art that is widely utilized within global industry in this post-crisis environment. ERM is not, however, a bromide and does not necessarily require elaborate systems and processes to provide an adequate level of protections for an insurance company.

It is ironic that a number of the dominant global financial services companies that succumbed to the financial crisis through either a direct failure, or else required the support of governmental entities to prevent their eventual insolvency, had long-standing Chief Risk Officer and ERM functions institutionalized into their ongoing operations and Board level reporting. The ERM process failed in these institutions.

The failure of these institutions arose from inadequate risk models and unanticipated correlations of risk within various portfolios (actual results differed from the expected). Further, the inter-connected nature of global financial enterprises led to broad systemic failures that were completely unforeseen (the failure of one institution quickly led to the failure of others).

Risks that were (seemingly) partitioned into well understood portfolios of exposure witnessed a wide degree of loss correlations. “Prime” mortgages, for example, failed at rates that were more anticipated in the “sub-prime” pools and, ultimately, the securitized assets supported by both created investor and

counterparty failures that threatened carried levels of equity across the entire financial system.

It was this over-reliance upon risk models that contributed to heightened appetites for financial leverage in the pre-crisis period to optimize returns on capital. This over-reliance drove insolvency levels when unanticipated credit losses were eventually manifested.

As insurance professionals, we are very conversant with the concept of “return periods” as respect catastrophic events. Insurance companies manage their books of business to certain overall return period assumptions – not necessarily to the extreme outlier events that are possible.

Thus, reinsurance is often purchased and capital is assessed by rating agencies against moderately likely return period events, such as the “1 in 100” or the “1 in 250” return periods. It would be economically inefficient to purchase, annually, reinsurance to protect much higher severity events (against the higher return periods).

Two fundamental ERM risk assessment questions that we always ask clients are: “What is your probability of ruin?” and “What events, or series, of events could lead to the failure of your organization?” These are the fundamental questions the Board of Directors and the organization’s management team need to be able to answer irrespective of industry, the nature, or size.

These questions do not necessarily imply that all such outlier events require complete risk transfer solutions! To purchase such extreme risk transfer solutions may not be economically efficient or practical; it could dramatically impede the ability of the company to generate compelling economic returns over time to provide full protection against risks that are remote in their likelihood. Clearly, however, the *potential* drivers of failure, and the correlation of risks, needs to be clearly understood. The solutions involved can involve the normal risk management concepts of mitigation, or some element of risk transfer.

ERM requires a company to contemplate both obvious and less conspicuous forms of risk. As Warren Buffett has often said, “it is the unexpected risk that will get you every time, not what is widely expected”. Thus, the highly anticipated “Y2K” or “H1N1” exposures were, ultimately, non-events while unanticipated volcanic disruptions or tsunami events have had a wide reaching and substantial impact.

We live in a world of unprecedented volatility; oil has varied from \$150 per barrel to less than \$40 per barrel during a one year period. Stock averages have seen substantial double-digit increases and decreases. External “shock” events are increasingly likely and geopolitical events could conceivably bring the global financial markets to a crash within a 72 hour period through energy and supply

chain disruptions. This is the “new normal”. The old measures of evaluating and mitigating organizational risks have been transformed. New risk exposures seem to be surfacing by the day.

Across various industries, there are some common elements of risk in an ERM framework; these broader elements often transcend the common perils associated with traditional insurance solutions:

- credit and counterparty risk
- traditional “insurance risks”
- business interruption risks (primary, secondary, and tertiary suppliers and customers)
- foreign currency risk
- interest rate risk
- management liability risks
- commodity price fluctuation risk
- product liability and recall risk
- control risks
- system risks
- investment risks
- political risks
- disaster recovery/business continuity risks
- obsolescence and marketplace risks
- human resources risks
- critical dependencies and supply chain risks
- terrorist risks (including eco-terrorism risks)

The incidence of such risks has a direct relationship to the organizational complexity and scope of operations. That is, highly disparate organizations that operate in a variety of countries have more inherent enterprise risk than domestically focused entities with specialized business models. All organizations, large or small, are subject to the vagaries of the overall economic system. As the financial crisis demonstrated, no industry or region was immune to its affects.

All forms of enterprise risk need to be assessed in the context of their likely frequency of occurrence and severity as to financial impact.

On an overall “macro” basis, however, it is clear that overall levels of risk are increasing with global inter-dependencies and tight supply chains. Further, the volatility associated with investments, currencies, and commodity prices is unprecedented and subject to severe swings in capacity and shortages. The level of business complexity that exists will drive the level of enterprise risk exposures to new heights.

It is incumbent for a management team to continually monitor the external environment to contemplate the range of exposures and events; including potential outlier extreme events.

Property and casualty insurance carriers have a variety of sources of enterprise risks:

- Asset risks:
  - Investment holdings
    - concentration risks for both single issuers and by sector concentration
    - duration risks (the risk that long-term bonds may depreciate materially due to changes in interest rates)
    - Bank concentration risks (given FDIC limitations at \$250,000 per institution)
  - Asset/Liability matching risk – does the overall duration of the investment portfolio effectively match the overall duration of the loss reserves?
  - Investment reinvestment risk – the risk that maturing investments may not be able to roll-over to equivalent yielding instruments at maturity.
  - Reinsurance recoverable assets (both uncollectible accounts due to credit impairment and those that are uncollectible due to disputed cessions – the so called “can’t pays” and “won’t pays”)
  - Premium receivables – the credit and execution risk associated with brokerage firms and potential concentration issues.
- Liability risks
  - loss development for long-tail lines of business
  - overall risk arising from its underwriting book
  - liability duration assessments
  - “leakage” associated with escalating defense costs and TPA fees
  - financial and operational leverage – is capital overly exposed in comparison to premium writings or insurance and financial liabilities?
- Off balance sheet contingent liabilities
  - letters of credit
  - loss sensitive accounts – the unexpected ultimate premium less cash paid to date (for retrospectively rated policies) or the deductible portion reimbursable (for large deductible policies)
  - life insurance (and structured settlement) annuities
  - material coverage disputes
  - litigation risks
- Market risks
  - premium adequacy
  - new product development and related execution risks
  - distribution network risks due to aggregation issues and potential market disruptions

- Tax law changes – unexpected changes to both the U.S. corporate tax scheme and/or changes to state levied premium taxes constitute a material source of risk.
- new forms of product distribution that could affect traditional pipelines (such as new web-based platforms and related market entrants)
- Macro-economic risks
  - Economic trends can adversely impact ratable policy accounts – across an entire underwriting portfolio – markedly. This is most pronounced in very economically sensitive segments such as workers compensation or commercial auto and trucking.
  - Reinsurance availability and capacity – both are a direct function of industry underwriting results, catastrophic events, and adverse investment trends. Further, the increased concentration of reinsurers could lead to a potential capacity availability issues for certain lines of business in certain regions. It is possible that sudden increased in reinsurance rates may not be fully supported at the primary insured level due to regulatory constraints on underlying filed rates; thus, margin pressure (and potentially unacceptable pressure) may ensue that greatly constrains the viability of the company.
  - Regulatory risks – the state regulated insurance industry may be facing some heightened oversight from the federal government; a model may be evolving where the states are responsible for pricing and market conduct and the federal government will take an enhanced role in solvency regulation. Various proposals in Congress suggest an increased role for the Federal Reserve as an overall financial services systemic regulator. From an international perspective, the G20 countries widely endorse a similar regulatory framework. Clearly, regulation and oversight in the insurance industry will be increasing.
  - the potential impact of climate change to catastrophic events
- Litigation risks
  - adverse tort trends in various jurisdictions
  - emerging issues related to mass tort actions and the risk associated with piercing various years of coverage under occurrence policies

There are also a variety of “soft” risks that can adversely impact an insurance carrier. First, the specialized staffing needs of the industry face demographic trends that are not favorable. A substantial percentage of insurance professionals are on the forefront of retirement; it will be a challenge to replace this level of institutional knowledge (a critical risk to the highly specialized monoline carriers).

Second, the industry is being transformed in certain lines through technology. Thus, a smaller regional carrier could be disadvantaged vis-à-vis the larger national carriers due to the depth of their financial resources to invest in such capital intensive tools and systems.

Enterprise risk in an insurance organization is further complicated by the simple (obvious) fact that carriers are in the risk taking and risk bearing business. By their nature, insurance companies are taking calculated risks against their dedicated capital bases.

The successful and well designed retention of risk leads to the accretion of capital over time; selective “risk bearers” are advantaged relative to “risk traders” who simply arbitrage risks. In an ERM framework, a balance is required to ensure appropriate risk appetites and controlled risk undertakings so that capital levels are never unduly threatened.

From an ERM perspective, some of the underwriting considerations for an insurance company include the accumulations of certain exposure types from both a gross and net (of reinsurance) perspective. The credit risk associated with reinsurance can never be overlooked; any uncollectible sums are borne by the ceding company and most insurance insolvencies globally have been partially due to the impact of uncollectible reinsurance (e.g. Mission Insurance Company).

Catastrophic exposures and liability accumulations are managed through computer risk models that analyze the probable maximum loss (PML) arising from certain perils (e.g. wind, earthquake, tornado and hail). A few key metrics arise from the models: (a) the gross and net (of reinsurance) PMLs; and (b) the annual average loss estimation – that is, the normalized CAT “load” that is evident annually when year-to-year volatility is removed.

Both the rating agencies and regulators carefully monitor CAT aggregations as respects either the indicated economic capital or regulatory capital levels. The intent is to manage the exposures at a level of materiality that could adversely impact capital at reasonable “return period” intervals of severity spikes. As mentioned earlier, the extreme “mega-CAT” outlier events do not usually represent an efficient economic risk transfer proposition.

Further, underwriting limits are a key factor in an insurance company’s enterprise risk assessment process. Key questions in this regard are: (a) what is the limits profile of the organization (or by business unit)? (b) is there “balance” evident for certain premium or policy bands to compensate the carrier for the inherent degree of risk?

Risk is governed in an insurance carrier in a variety of ways, based on size. The large global organizations often have a dedicated Chief Risk Officer who has

dual reporting relationships to both the CFO and the CEO of the organization, as well as reporting to a risk committee of the Board. In moderate-size insurance organizations, often the CFO is responsible for the ongoing monitoring of a variety of sources of organizational enterprise risks. In a small carrier, often the President of the company has this responsibility.

Risk governance takes a number of forms in an insurance company. First, the overall policies of risk need to be delineated and vetted.

Second, regulatory compliance is an absolute requirement – it is not discretionary. Regulators will monitor the level of capital via risk-based capital requirements and ongoing audits.

Third, rating agencies provide another level of risk monitoring for the insurance company across a variety of financial and operational ratios. The riskiness of the insurance company is captured in the assigned rating level and capital adequacy score that is determined.

Fourth, risks are periodically measured through audits of external CPA's and from reinsurers (both premiums and claims). These functions may be supplemented by some internal audit sources at the company.

Insurance companies can gauge and calibrate risks across a variety of measurements. These quantitative measures should be customized to the company and its unique book and its overall risk tolerance.

Ultimately, risk levels require disclosure to stakeholders via financial reporting guidelines (often in the form of footnote disclosure) and rating agency and regulatory disclosure.

Levels of liquidity that are maintained are a function of ERM within the insurance company. Longer-tailed business tends to suggest that less liquidity needs to be maintained than would be the case for a book that is subject to sudden spikes in severity.

ERM also suggests that sources of, and overall access to, capital be well understood and evaluated pre-event to ensure the survivability of the company post-event. Extreme events will cause a sudden and substantial depletion of capital levels and a prudent carrier will have evaluated sources of capital, and will have determined access to capital strategies, in advance of the event.

Irrespective of size, one critical component of ERM is the risk tolerance level, or risk culture of the company. This is a function of the company's tolerance for variability and volatility in results as indicated by shareholders or owners. The dynamic of a publicly traded insurance company introduces general investor

expectations for a more normalized and predictable earning stream over time (volatility constrained).

Insurance is, fundamentally, a balance sheet centric business. By contrast, the income statement of an insurance company will show natural volatility due to loss severity spikes. Success comes through managing the balance sheet prudently over time as opposed to an exclusive focus on achieving quarter-to-quarter earnings growth expectations from capital providers.

A topic of increased interest to rating agencies especially, and to capital providers more recently, is that of economic capital and the risk adjusted returns on that economic capital. Economic capital attempts to calibrate the underlying riskiness of certain lines of business and, in turn, allocates higher relative amounts of capital to support the inherent underwriting risks.

Economic capital differs from accounting capital in that it is not nominally based on accounting ratios but is more subjective determined based on the underlying business that is underwritten. Thus, the economic capital required to support a long-tail excess casualty line will be significantly higher than that required to support a short-tailed program. The higher levels of economic requirement require higher relative returns; accordingly capital is rationed within the insurance company to the highest and most efficient returns in such a model.

It is critical that any insurance carrier realize that the definition and quantification of risk is an evolving process. Emerging exposures need to be carefully studied and evaluated in terms of their potential impact to the organization over time. As a variety of organizational disciplines are impacted by the various aspects of risk (particularly in the larger entities) it is imperative that risk be evaluated in a multi-disciplined matter and reported to the appropriate level of management (and ultimately to the Board).

An ERM framework requires a vigilant devotion to employee training and cross-training. A risk culture connotes a company where the understanding of risk is an integral part of the overall decision making at all levels and the tactical operational plans support this overall strategic mission.

Finally, most extreme events introduce a very significant “risk error” component into their ultimate financial impact. That is, the actual results may not correlate highly with the anticipated results of the model.

Often, major earthquake or hurricane events have demonstrated actual losses that are substantially higher than the expected results of the CAT models. This phenomenon is called “modeling error” and is an expected outcome from these relatively nascent tools when compared to highly complex geologic and weather events that span thousands of years in frequency.

A prudent company manages its capital accordingly and, by design, carries a capital cushion for this unexpected error factor and other ERM type events.

A key failing of the global banks and capital markets firms that succumbed to the financial crisis was their willingness to keep their capital cushions at the lower levels indicated by economic capital models (to better leverage results to meet investor expectations).

As insurance risk bearers, carriers should always be biased towards keeping more capital than is minimally required for certain rating levels or regulatory purposes, for such unpredicted and emerging risks.