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Risk Profile, Appetite, and Tolerance: Fundamental Concepts in Risk Management and Reinsurance Effectiveness

Prior to the recent turbulence in the financial markets, insurers and reinsurers were increasing their use of Enterprise Risk Management (ERM) to make risk and capital management decisions. While this was driven in part by rating agencies and regulators, many carriers began to recognize the value of metric-based frameworks and capital models in evaluating their portfolios.

Overview

As the financial crisis continues to unfold – and explanations are offered – it is clear that more robust enterprise-wide risk management will be the result. Many industry participants and observers anticipate that regulatory and rating agency scrutiny will accelerate at an unprecedented rate. Further, insurer and reinsurer shareholders and Boards of Directors are likely to demand that risk be measured and managed as it relates directly to capital on an enterprise-wide basis, particularly as an integral part of the corporate governance process.

Advancing the ERM dialogue can help insurers make value-accretive decisions through the improved deployment of capital. A thorough understanding of the basic concepts of enterprise-wide risk is fundamental to the implementation of ERM disciplines, establishing risk management parameters, and integrating this knowledge into the process of making strategic business decisions. As a result, insurance and reinsurance firms will not only be better prepared to respond to the internal and external questions relating to risk and capital, but (perhaps more importantly), they could benefit by establishing hedging or reinsurance strategies to drive capital efficiencies and maximize stable risk-adjusted returns.

We will address three core aspects of the emerging ERM and capital management dialogue:

1) We will offer a framework for defining common terminology: distinguishing Risk Profile, Risk Appetite, and Risk Tolerance. Currently there are no consistent, overarching definitions of commonly used risk terms. Greater clarity in this area is fundamental to a proper understanding of the concepts involved.

2) We will offer a framework for discussing risk tolerance, including best practices.

3) We will present the results of Guy Carpenter's initial risk tolerance benchmarking study, which will allow us to advise our clients about their own circumstances and the general context of the markets in which they operate.

Risk Profile, Risk Appetite, and Risk Tolerance

The definitions and use of Risk Profile, Risk Appetite, and Risk Tolerance vary considerably in professional articles and position papers across the (re)insurance industry. To properly consider the dynamic tradeoff between risk and return we provide the following definitions.

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Risk Profile: the broad parameters a firm considers in executing its business strategy in its chosen market space.

Risk Appetite: the level of uncertainty a company is willing to assume given the corresponding reward associated with the risk. A company with a high risk appetite would be a company accepting more uncertainty for a higher reward, while a company with a low risk appetite would seek less uncertainty, for which it would accept a lower return.

Risk Tolerance: a stated amount of risk a company is willing and/or able to keep in executing its business strategy – in other words, the limits of a company's capacity for taking on risk.

Example
RT Co. is a large, reasonably well-capitalized national multi-line writer with profit and growth goals typical of those of similar insurers. Using the definitions above, RT Co.'s **Risk Profile** can be thought of in terms of the market space in which it wants to participate (e.g., lines and classes of business) and the corresponding management decisions (i.e., risk selection, claims handling processes/back office, distribution channels, expense structure, and strategic execution). Alternatively, part of RT Co.'s Risk Profile is the market space in which it does not want to participate, such as aggressive asset strategies or international expansion.

Consistent with its Risk Profile, RT Co. evaluates how much profit potential is available and the cost of mitigating uncertainty to develop its **Risk Appetite**. For example, after analysis, a "moderate" Risk Appetite maybe defined by RT Co. as:

- A target return on equity of 10 percent
- Retention of net catastrophic risk less than or equal to its peers
- Avoidance of excessive underwriting volatility, asset risk, or operational risk

Given the risk appetite of RT Co., it establishes a set of **Risk Tolerances** to properly articulate its capacity for assuming risks. For example, RT Co., may express its risk tolerances as follows:

- High probability of maintaining an A rating
- Quarterly impact from non-catastrophe underwriting results not greater than 10 percent of forecasted earnings
- Net 1:100 probable maximum loss (PML) limited to 10 percent of capital
- Net 1:250 PML limited to 15 percent of capital
- Remote chance of asset loss greater than 10 percent of capital in any one year

To further clarify the concept of Risk Appetite, the following chart shows the basic tradeoff between risk and reward, where the willingness to bear risk increases the potential profit while increasing the possibility of a decrease in surplus (capital).

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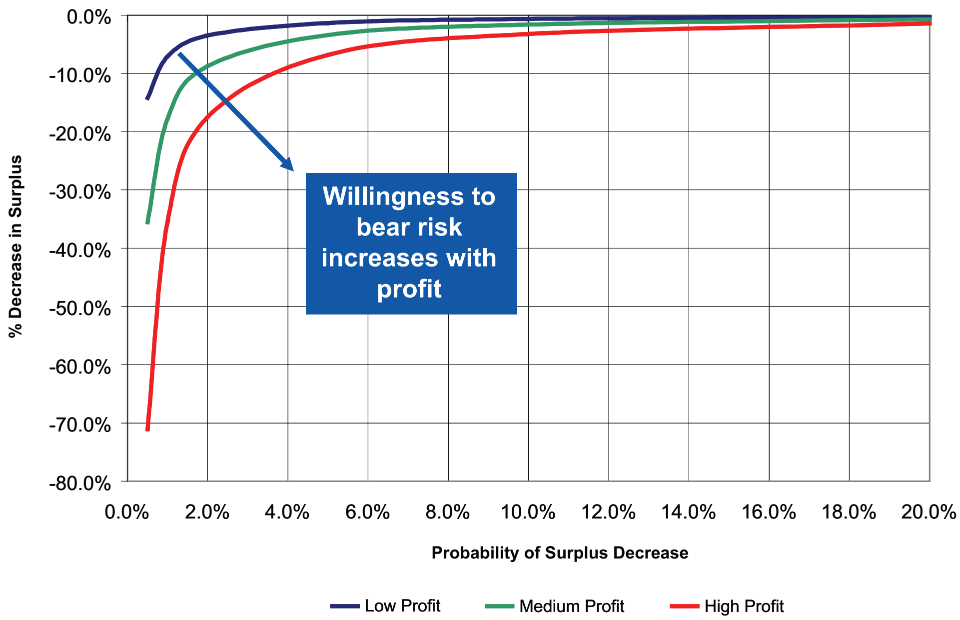
Risk Tolerance Profiles



Source: Guy Carpenter & Company, LLC

Best Practices and Trends in Using Risk Tolerance to Manage Risk

Because risk appetite and enterprise level risk tolerance statements are fundamental to a company, senior management and the board of directors should be active participants in the identification and consideration of risk/reward tradeoffs as they establish the Risk Profile, Risk Appetite, and, ultimately, the Risk Tolerance to be used for both internal decision making and external communication. The establishment of a Risk Committee as part of the board of directors is now widely viewed as the proper authority responsible for reviewing enterprise-level Risk Tolerance levels.

Rating agencies and other interested parties look for management to be able to link significant changes in its Risk Profile with corresponding changes to the company's Risk Appetite or Risk Tolerances. Continuing the prior example, assume RT Co. announced its intention to aggressively grow its property business in the Southeastern United States. Rating agencies would want to know how the implications on its risk profile (i.e., increased catastrophe exposed business) impacted the company's stated risk appetite or risk tolerance. For example, if RT Co. did not change its risk appetite, a rating agency would expect the company to defend its reinsurance purchasing strategy in light of the increased catastrophe risk.

A critical best practice in this area is to ensure that these top-level risk management decisions are integrated into the operational framework throughout the firm. The following are examples of such linkage and operational concepts:

- Enterprise-level monitoring and evaluation of risk-taking and risk mitigation strategies through economic or risk-based capital measures, in which all significant risks are identified, measured, and managed (including stress testing)
- Operational integration and communication by management of risk tolerance to influence operational decisions, for example, through underwriting guidelines, zonal aggregates, and pricing discipline
- Use of risk mitigation strategies when risk exceeds risk tolerance limits or could impair reputation

Risk Tolerance as Part of Risk Hedging and Reinsurance Strategy

Since companies compare the cost of alternative reinsurance structures with the associated benefits, as measured by the relative impact on their Risk Tolerance boundaries, understanding a company's Risk Appetite and Risk Tolerance is a strategic imperative. The frequency with which insurance and reinsurance companies will have conversations with their constituents (e.g., rating agencies, regulators, and boards of directors) on this topic will increase dramatically in the coming months. A deep conceptual understanding, as firms shape their risk tolerances, is critical to achieving successful outcomes.

Area	Example of Risk Tolerance Boundaries Significantly Impacted by Reinsurance
Sustainability / Business Continuity	Less than X% chance of capital loss greater than Y% Less than X% chance of rating agency downgrade Less than X% change of leverage ratio below Y
	The gap between actual capital and economic capital at least x% of actual capital[1]
	Net PML of no more than X% of surplus
Earning Volatility	Remote chance of [profitability measure][2] being less than budget by X% or $Y Less than X% chance of net income falling below $Y
	Remote chance of impact of catastrophic losses being less than x% or $Y of a profitability measure
Portfolio Management	Net loss from any one geographic region limited to X% of capital

[1] Differentiated from regulatory capital (the mandatory capital the regulators require to be maintained), the concept of economic capital is generally defined as the amount of risk capital that a firm requires to cover the accumulated or unified risks of the enterprise, such as the risks assumed from insurance hazard, financial (e.g., market and credit risk), and operational risk. In essence, it is the amount of money, which is needed to secure firm survival in a worst case scenario.

There are many ways a company can derive economic capital, such as through use of an internal model, a rating agency or regulatory factor based model or through simple measures such as solvency ratios. From a practical standpoint, companies tend to manage the gap between their actual and economic capital as they want to guard against the possibility of having less capital than their targets.

[2] Examples of profitability measures include underwriting results, pre-tax or post-tax income, and earnings per share.

Source: Guy Carpenter & Company, LLC

As indicated, there is not a one-size-fits-all risk tolerance statement, and most companies use several implicit or explicit risk tolerance boundaries. The table below shows examples of risk tolerance areas directly impacted by reinsurance.

Guy Carpenter undertook a project to study the ERM structure and risk tolerances of firms within the industry. The study was comprised of publicly available information, including annual reports, regulatory filings, and analyst and rating agency reports. It identified information from 12 companies domiciled in Europe, six in the United States, nine in Bermuda, and eight in the Asia-Pacific region. These companies are mainly publicly traded and have large global operations.

The overall observation is that the public disclosure of companies' risk tolerances is limited. Based on our review, though, the following general observations and trends were identified:

- Of the 35 companies in the study, all disclose some form of consideration of Risk Tolerance at the enterprise or risk segment level (such as market/asset, credit, or insurance risk).
- Firms generally disclosed the method for measurement, but not the amount or level. Metrics used for measurement varied based on the risk being measured. Some insurers used more than one metric. Examples of disclosure of method and corresponding level varied widely (See below).

Risk Measurement Method and Corresponding Level, by Segment

Method	Group Level Disclosure	Market/Asset Risk	Credit Risk	Insurance Risk
VaR	**1:250, 1:200, 1:100**	**1:200, 1:100, 1:20 + 100 bp sensitivity test**	**1:100**	**1:200, 1:100, 1:75 , or Return Period Not Disclosed**
TVaR	**Return Period not disclosed**	*did not appear*	*did not appear*	**Return Period not disclosed**
PML	*did not appear*	*did not appear*	*did not appear*	**Return Period not disclosed**
Threshold	*did not appear*	**Max investment by Instrument**	**Aggregate risk > 10% of shareholder equity; 2% of total inv. Portfolio**	*did not appear*
Stress Test	*did not appear*	**+/- % change in market; historical high default rate; +/- 100 bp yield curve shift**	*did not appear*	*did not appear*

Source: Guy Carpenter & Company, LLC

- The most prevalent disclosed Risk Tolerance methods were Value at Risk (VaR) and stress testing.
- Disclosures related to market/asset risk (measured with some form of VaR, max loss, or percent impairment threshold) were found most commonly in our survey (See below).

Percentage of Study Participants with Affirmative Disclosure by Segment/ Region

	Group Level Disclosure		Market/Asset Risk		Credit Risk		Insurance Risk	
Region	Method	Level	Method	Level	Method	Level	Method	Level
Europe	42%	25%	58%	8%	42%	0%	50%	0%
USA	17%	17%	67%	33%	33%	0%	33%	0%
Bermuda	0%	0%	56%	44%	33%	22%	11%	11%
Asia Pac	38%	13%	50%	38%	38%	13%	25%	13%

Source: Guy Carpenter & Company, LLC

- European companies tend to disclose more information about their ERM "structure" characteristics – such as having a Chief Risk Officer (CRO), reporting relationships, a risk committee, or reporting lines into the board – than companies in other regions, with Bermuda and Asia-Pacific companies disclosing the least about their ERM structural elements. We believe that the low disclosure identified in the survey in some regions does not suggest that the firms do not have the roles noted. Rather, it highlights that the firms included in the study do not disclose the structural element if they exist.

Percentage of Study Participants with Affirmative ERM Structure Disclosure by Type/ Region

	Structural Disclosure				
Region	Group CRO	CRO Reports to Board	CRO Reports to Risk Committtee	Group Risk Committee	BoD Resp
Europe	67%	58%	42%	83%	100%
USA	50%	17%	17%	50%	67%
Bermuda	44%	0%	22%	44%	67%
Asia Pac	25%	13%	13%	75%	75%

Source: Guy Carpenter & Company, LLC

- Very few companies offer an opinion or position regarding excess capital, although some reference commentary on management activity, such as share buybacks, that is indicative of an opinion relative to excess capital

- The disclosure of capital allocation and modeling method appears most often in Europe, with no apparent distinction between insurance and reinsurance companies. Combined operations (i.e., those that include both insurance and reinsurance within the corporate operating structure) appear to provide more details in their disclosure/description of modeling methods. Examples of methods, as stated, include:

- Mix of risk-based capital models and scenario testing, sometimes include the International Monetary Fund (IMF) stress tests

- Economic-based capital modeling

- Risk-based capital modeling, such as for the UK Financial Services Authority (FSA)

Anticipated Change – Increased Scrutiny of Risk Appetite and Risk Tolerance

We anticipate that there will be considerable momentum, growing at an ever accelerating pace, as regulatory, capital markets, and legislative influences around the world join to require management recognition of the risks of their enterprises.

Despite the fact that publicly disclosed information is so limited, the increasing external demands will be coupled with management recognition of potential competitive advantages. We anticipate significantly increased transparency with regard to the Risk Profile, Risk Appetite, and Risk Tolerance by firms in the industry. We intend to continue to monitor disclosure trends and update the Risk Tolerance Benchmarking Study as this broader base of information becomes available.

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