

WHITE PAPER 1 OF 3

The Need for Efficient Risk Financing Strategies

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Introduction

As corporations and their risks grow in scale and complexity, risk managers face numerous challenges navigating the world of risk financing, from assessing coverage needs to evaluating alternative financing mechanisms beyond traditional insurance. This white paper series serves as a starting point for addressing these challenges. Through our discussions, we will explore how adopting a portfolio view of risk, informed by stochastic risk models, can pave the way for crafting optimal risk financing strategies that align with insurance cost, coverage and profitability goals.

Historical Pitfalls: The Siloed Approach

Traditionally, many firms approached insurance risk financing strategy primarily by looking at each source of risk in isolation. Property risk is assessed and financed under one insurance program, directors and officers liability under another, cyber under yet another, so on and so forth. Taking this siloed, monoline approach to managing a company's overall hazard risk profile can be inefficient for an organization.

This traditional strategy of insurance purchasing naturally evolved in response to product specialization pressures from the underwriting community. When viewed from the insurance buyer's perspective, this approach can run the risk of gradually drifting into an overly reactive or transactional organizational mindset. A company assessing risks in isolation may find itself addressing only the most immediate threats without considering the broader risk landscape, always one step behind and subjecting its insurance costs to the market fluctuations of underwriting cycles. Taking a more dynamic and holistic view of enterprise-level hazard risk enables organizations to plan for and weather these fluctuations, favoring long-term strategic planning through managing the collective impact of exposures.

A siloed approach to assessing risks may also inadvertently lead to overspending on excess insurance coverage relative to the firm's appetite for hazard risk. Pooling together risks of low correlation often results in total volatility less than summing the volatilities of each risk. This phenomenon is referred to as a diversification benefit, with adverse events from one risk offset by positive outcomes from another. When risks don't move together, realizing their adverse outcomes simultaneously is less likely, offering a buffer to potential losses over a given period and creating a lucrative risk financing opportunity.



Total Cost of Risk (TCOR)

Total Cost of Risk (TCOR) can be defined in many ways. Typically, it refers to the expected retained losses (losses that the company is responsible for paying) plus the insurance premium and frictional costs (premium taxes, collateral costs, etc.), summed across all the sources of risk to which the company is exposed.

For a refresher of these core risk finance topics, we refer the reader to Brown & Brown's [Alternative Risk White Paper Series](#) exploring the fundamental tools that companies use to estimate and review their corporate risk profiles.

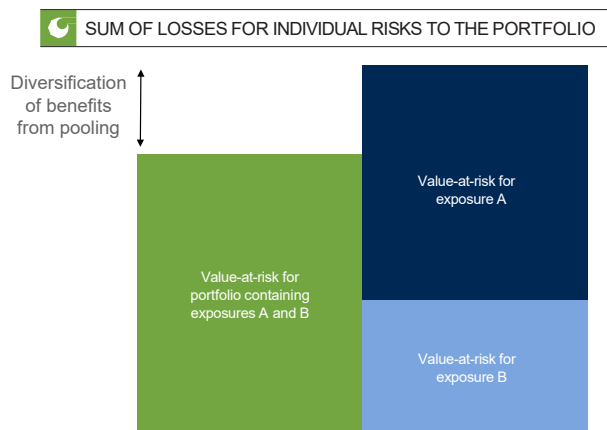


Figure 1: Diversification benefits from aggregating risks.

Efficient Frontier of Insurance Programs

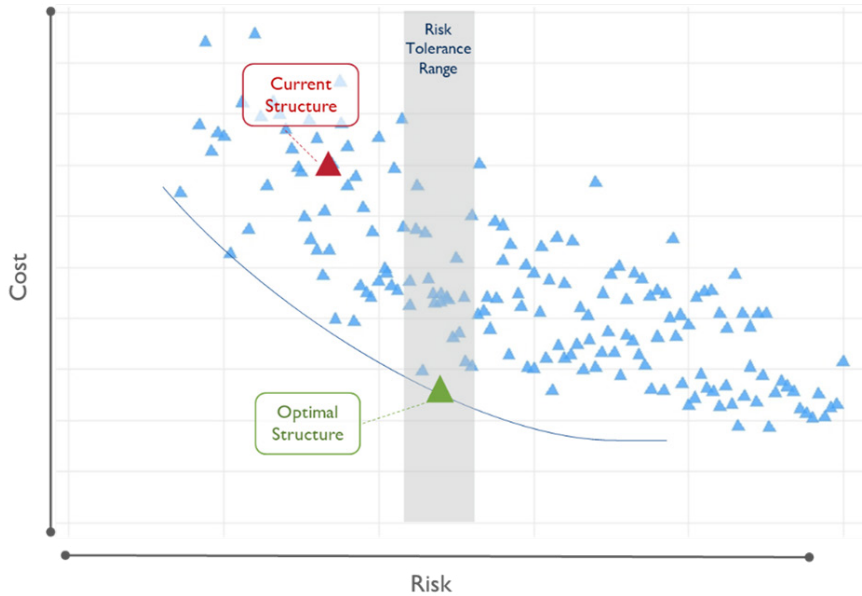
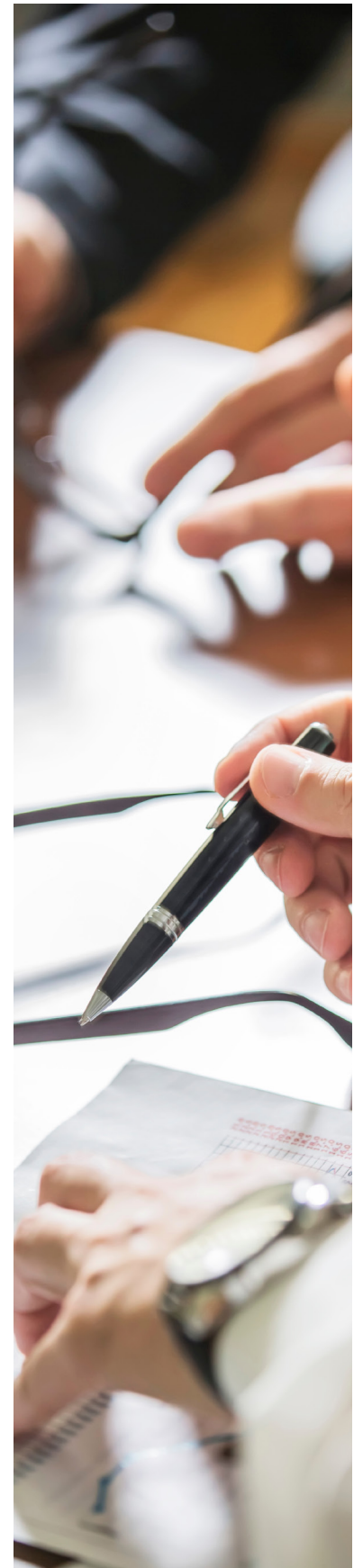


Figure 2: Efficient frontier for assessing risk financing programs.

By adopting a portfolio view, companies can capitalize on these diversification benefits by evaluating various combinations of risk financing options, which can include a mix of traditional insurance, self-insurance and alternative risk financing mechanisms. Each option is evaluated by its **Total Cost of Risk** (reward) and the overall level of loss it exposes the company to (risk). This risk-reward analysis produces a firm-specific efficient frontier, the set of risk financing options that minimize the total cost of risk for each risk level. The closer a company moves to its efficient frontier – operating within the bounds of its risk appetite – the more its total cost of risk is reduced.

The portfolio approach to assessing risk functions as a key tool for management decision-making. Deciding where these risk appetite bounds lie – and, ultimately, which strategy along the efficient frontier to pursue – prompts essential discussions about risk at the enterprise level. What are the firm's strategic objectives behind managing hazard risk? Protecting against catastrophic losses? Decreasing its reliance on costly insurance capital? Firms bound by regulatory requirements or contractual obligations may consider different strategies than those seeking to maximize enterprise value. These motivations must be clearly defined to establish the appropriate set of risk financing strategies.

Through these discussions, firms must also determine their risk tolerance. What are the relevant corporate financial metrics, and how much downside is there appetite for in these metrics? The interests of all internal and external stakeholders, from shareholders to the board of directors, should be considered in the decision. These conversations help shape a focused corporate risk strategy and align its risk financing approach for enduring financial stability.



The Key Ingredient: Stochastic Modeling

For a risk manager, adopting an integrated approach to assessing risk is only half the battle; the other half lies in harnessing the right analytical models. Historically, many organizations have relied on deterministic models for risk evaluations, particularly for lines with limited historical data, such as cyber. These models output a singular point estimate based on a provided set of inputs. Stress tests or probable maximum loss (PML) models are common examples of deterministic models: They assume that an adverse event will occur and quantify the financial impact of such an event, giving no regard to the likelihood of that event actually occurring. While deterministic models do have their place in certain risk assessments, a nonrandom model output falls short in showcasing the risk-reward tradeoff necessary for comparing risk financing options.

Stochastic models (i.e., models incorporating randomness), in contrast, estimate a probability distribution of potential losses, onto which various risk financing strategies can be overlaid to understand both the expected costs of a strategy (focusing on the *midrange* of a retained loss distribution and any associated fixed costs) and, equally as important, a measure of downside risk (focusing on the *adverse tail* of a retained loss distribution). Both risk measures require understanding the likelihood of various losses and are critical to an efficient frontier analysis.

In the next two white papers in our series, we demonstrate how firms can leverage stochastic models for a portfolio view of risk to set an optimal risk financing strategy and potentially realize significant financial savings.

- *White Paper 2: A Case Study Using Advanced Stochastic Modeling* will walk through a case study involving a fictional company using two of Brown & Brown's advanced stochastic modeling frameworks: Directors & Officers In-Site™ and Cyber In-Site™.
- *White Paper 3: Designing an Optimal Risk Transfer Program with Stochastic Models* continues the case study to show the power of using stochastic model outputs to design an optimal risk financing program.



Stochastic Model Benefits



Enhanced Decision-Making

Stochastic models consider the full loss distribution, allowing for extreme losses to be weighed against their likelihoods and for smaller losses to be incorporated into risk retention considerations.



Accurate Risk Transfer Quantification

Through loss simulations from a fitted probability distribution, stochastic models can better quantify the *expected* amount of risk transferred and retained under various strategies.



Portfolio View of Risk

Stochastic outputs can be integrated from any number of risk sources into a consolidated view of total risk, allowing firms to capitalize on the diversification benefits that a portfolio view of risk reveals.



About the Author

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