

As businesses grow, their needs for and opportunities with commercial insurance purchases change. Often the growth leads a firm to take more risk over time. As with other forms of capital, insurance capital affects both risk and reward: there may be an opportunity for cost savings, but that opportunity comes with greater risk. This white paper provides a foundation for making those decisions.

Taking more risk necessarily means buying less insurance. For small companies this is usually not an option, but large companies have more choices with regard to their insurance agreements, making the insurance purchase more complex for large companies. Why do large companies have more choices, and what challenges come with that freedom?

Less Uncertainty

In mathematics there are many rules (or principles) to follow. Two such principles impact this discussion. Our objective is to sample the data and predict future outcomes. In probability and statistics an essential principle is called **The Law of Large Numbers**, which states that, for a consistent sampling process, the larger the sample size becomes, the more predictable its future outcomes will be. Without knowing a lot about mathematics, this simply states that, for a given risk type and layer of coverage, *small companies tend to have greater uncertainty, but large companies tend to have less uncertainty.*

With respect to the insurance purchase, this principle suggests that because large companies have more data, they have more information, and that information reduces their uncertainty. If the outcomes are less uncertain, then the firm may seek to change the way it uses insurance capital. The most obvious evolution is that larger companies will seek to retain more of their own risk. The primary motive for retaining more risk is cost savings, which is derived from two sources. First, the insurance company charges a significant amount as a percentage of losses for their expenses and the risk (or volatility) itself, so the insurance buyer now has an opportunity to save those amounts if the risk is retained. This opportunity is real, even if both the insurance buyer and the insurance company have the same information and the same expectation of losses. Second, there may be an information gap such that the firm is ready to bet on itself, which we will explain further.

The Information Gap

Also from probability and statistics, considerable thought is given to sampling from a supersize dataset composed of several other smaller groups. **The Components of Variance** principle breaks the Total Variance of the supersize dataset into the Within-Variance (within the groups) and the Between-Variance (variance between the means of the groups). Again our objective is to sample the data and predict future outcomes. If all of the smaller groups are similar (or homogenous, with a small Between-Variance), then sampling from the supersize dataset will be a good predictor of future outcomes. However, if the smaller groups are distinctly different (or heterogeneous, with a large Between-Variance), then the sampling from the supersize dataset will be a poor predictor. The lessons here are that (1) the insurance company may have a ton of data, but their dataset is of limited value if it does not reflect how your business differs from the larger population of companies, and (2) the best predictor of future outcomes for your risks are created from homogeneous samples of peer companies very similar to your firm. One more point: If a suitable peer group is not found, then your firm's data (which is perfectly homogenous) may be a better predictor than the insurance company dataset. The bottom line is that there is always potential for an information gap due to heterogeneity related to Between-Variance.

With their large volume of claim data, the insurance companies think they have better risk information than the insurance buyers, despite the fact that their data is very heterogeneous. The insurance buyers often think they have better risk information than the insurance company, despite the small volume of claims any one buyer may have. *An insurance buyer who is willing to move toward self-insurance is betting their risk information is better than the insurance market's risk information.*

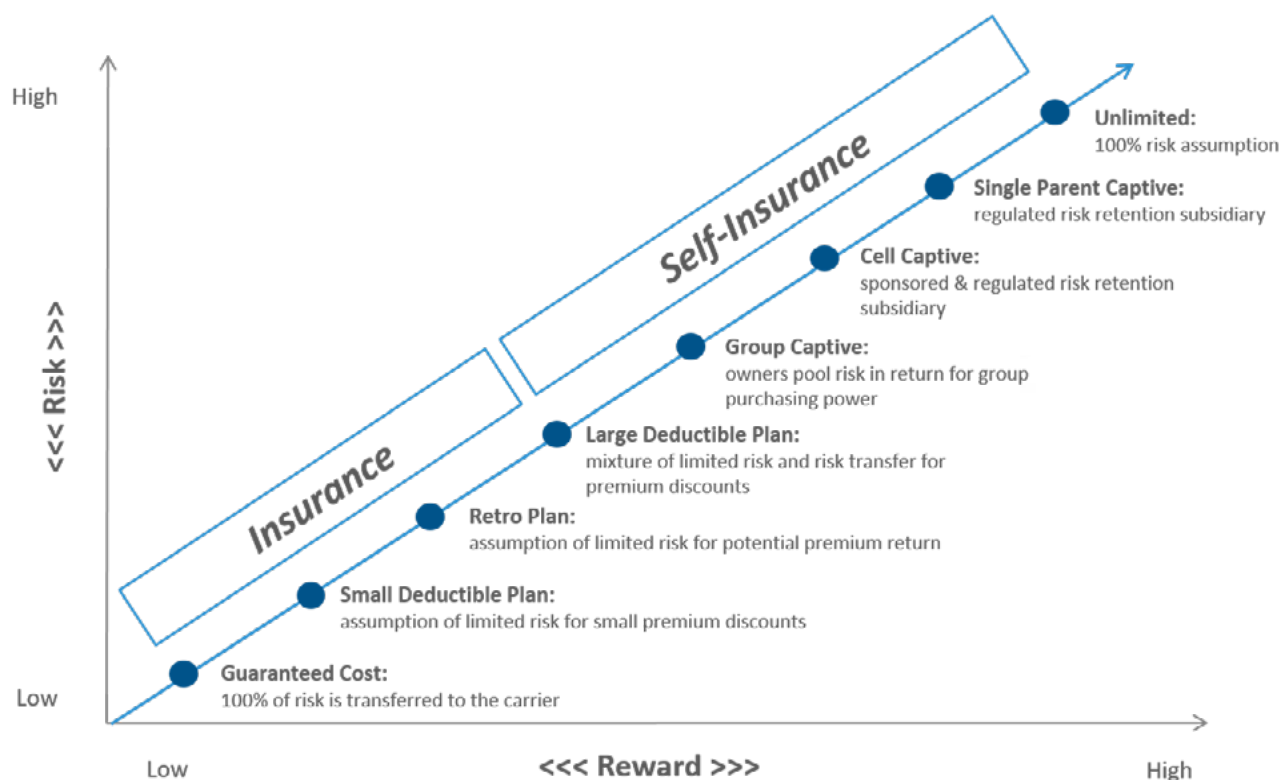
The risk information for the insurance buyer could be financial or operational. Financial information might include claims experience that is consistently better than what the insurance premium implies. Operational information might include operational enhancements that are expected to reduce the cost of risk. If the insurance buyer has recently improved customer contracts, implemented new safety protocols, improved claims settlements, etc., then there may be good reasons to suspect the improved risk conditions will soon bear fruit, despite the indications of past data. On the other hand, the insurance market has many insurance buyers who have sought to improve their risk conditions but still have bad claims.

Degrees of Risk Transfer

Assuming the insurance buyer wants to consider taking more risk, there are options among the many versions of the insurance agreement. Traditional insurance programs tend to be “Guaranteed Cost” products, meaning the fixed amount (premium) is paid up front for coverage (specified events) for a fixed period of time (policy period), and the cost does not change until the next coverage renewal. The first step toward taking more risk is a small deductible. See the chart below. The lower left represents full insurance and the upper right represents full risk retention. Each step from left to right is a lesser degree of risk transfer and a greater degree of risk retention. With greater risk retention comes greater reward if the final cost of losses is as expected.

A small deductible is a reimbursement of the first \$200, \$500, \$1,000 for each claim covered under the policy. It is intended to eliminate nuisance claims, and the total impact on the cost is negligible. Even so, the final cost to the buyer is unknown until all claims are resolved, and there may be a small reduction in premium for accepting the small deductible.

After a small deductible, there are other options with successively greater risk and reward, moving to the upper right of the chart. How would a buyer make an informed decision? How much risk should be retained vs. transferred?



Risk Modeling

We use actuarial methods to measure the key elements of your risk profile, and then we present the modeling results in a manner designed to encourage participation in the process. An insurance program should be analyzed and selected in a manner similar to investment decisions, by weighing risk and reward.

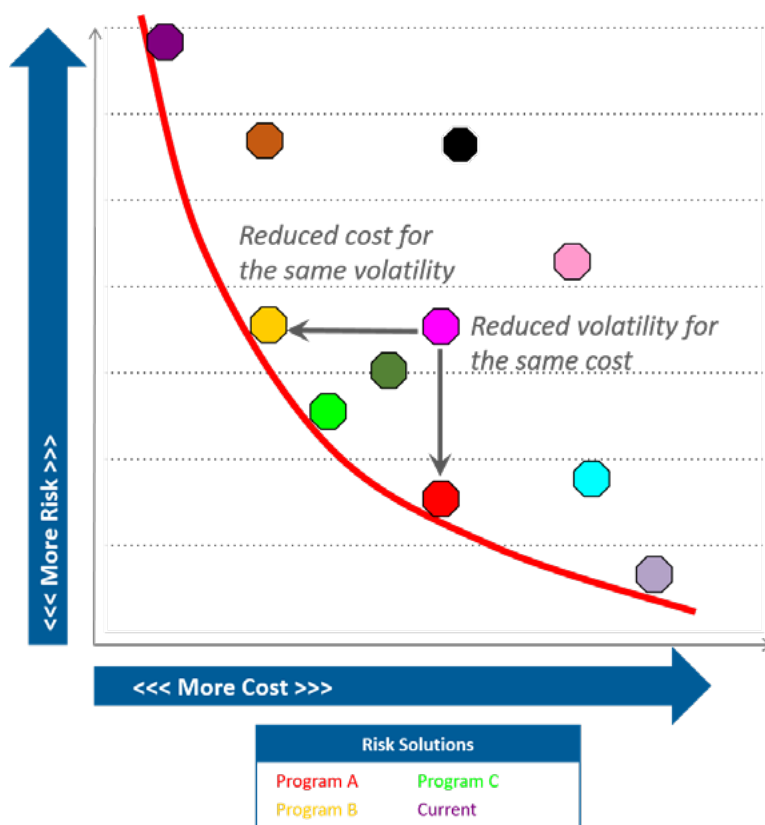
The Cost vs. Risk Optimal Simulation Scoring (CROSS) model is our proprietary model that can simulate numerous insurance program options to provide client-specific metrics and visual context to support informed risk decisions. The CROSS model includes **cost vs. risk** charts that plot (i) an array of client specific insurance program options, and (ii) the lowest cost/lowest risk options ("The Efficient Frontier" of the Total Cost of Risk (TCOR)).

In the chart below, the red line represents the optimal set of risk-reward trade-offs, **The Efficient Frontier**.

The array of insurance program options might vary by policy limit, retention level, and coverage features. Each program is represented as a point in the chart, using TCOR on the horizontal axis and a risk charge on the vertical axis. The risk charge can be determined in a number of ways, provided that the resulting charge is driven by the volatility of the retained losses. The options for the risk charge include (a) a portion of the selected confidence level based on the simulation, (b) the client's cost of funds under large loss scenarios, or (c) a client-defined risk charge related to volatility. In our experience the choice of the type of risk charge does not materially affect the choice of the best insurance program, as long as the risk charges are all designed to be directionally correct (increasing when risk increases, and decreasing when risk decreases).

The Efficient Frontier represents the series of insurance programs that are most efficient (lower cost, lower risk) based on the actual renewal quotes and our estimates of retained losses. For any insurance program not found on The Efficient Frontier, there is a more efficient insurance program with lower cost or lower risk. The best program should be chosen from among those insurance programs near to The Efficient Frontier, with the final choice based on the risk appetite of the insurance buyer.

Risk modeling efforts, like our CROSS model, reduce the many choices down to those insurance program options that are most efficient and provide thorough documentation to support the selected program.



Never settle for less.

For more information, visit McGriff.com or contact:

Trey Tasker, ACAS, MAAA
SVP & Chief Actuary
678.488.8535
ttasker@McGriff.com

All McGriff, a Marsh & McLennan Agency LLC company, risk services are advisory in nature and are designed to assist the client in the establishment and maintenance of a safe workplace. The responsibility to provide safe and healthful work conditions and operations free from known risk and harm to employees, third parties, and the environment is, and shall remain, that of the client. This proposal, and any subsequent reports, is not a warranty that reliance upon them will prevent accidents and losses or satisfy local, state or federal regulations. d/b/a in California as Marsh & McLennan Insurance Agency LLC; CA Insurance Lic: 0H18131.

Copyright © 2025 Marsh & McLennan Agency LLC. All rights reserved. McGriff is a business of Marsh & McLennan Agency LLC.