



Dynamic Capital Modeling

Maximizing return on your company's capital

May 2022

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Market intelligence and targeted analytics provide brokers with the tools they need to recommend appropriate insurance structures for most companies. However, as businesses grow and evolve, risk programs often become complex. For some companies, sophisticated analytics may be required to decide the point at which risk should be retained versus insured to optimize the company's overall cost of risk.

DYNAMIC CAPITAL MODELING (DCM) provides next-level analytics that can simulate claims within your program structure. Based on the results, Lockton can provide recommendations for optimal program structure should one or more of those claims become a reality.

This paper explains each component of the DCM to help you better understand the process and potential benefit to adding this perspective to your decision-making process.

Lockton's Dynamic Capital Model helps answer questions, such as:

- Are my limits adequate?
- Should I retain or transfer a risk layer?
- I have a unique program structure; how do I estimate what it will cost?
- My historical data is limited; what could the future hold?
- Which retention enables the best use of my company's capital?



Simulation analysis in insurance

The foundation of the DCM process is to simulate applicable losses for the underlying coverage and evaluate how those losses will be captured under different insurance options.

Simulation analysis involves running a large number of loss scenarios, each of which can be a possible outcome of the upcoming policy period. This provides insight on not only the expected loss for the policy period, but also on the distribution of possible losses and the probabilities that losses reach various thresholds.

Simulation output allows for a more informed decision on the trade-off between fixed costs and putting company's assets at risk.

How does a simulation model work?

First, loss data is analyzed to determine the parameters for the simulations. This can include historical data from:

Parameters calculated from the historical loss data include:

- **FREQUENCY:** How often an event is expected to occur. Claims are aggregated by whether they're expected to be common small losses, large losses or catastrophic losses to properly evaluate each type of insurance.
- **SEVERITY:** How high individual losses will be.

THE COMPANY

Used when loss experience is stable and volume is sufficient.

THE INDUSTRY

Used to supplement a company's limited experience with losses from similar companies, giving a more complete picture of potential losses.

DCM EVALUATES:

PROBABILITY OF LOSS

TOWER LIMIT

DEDUCTIBLE

EXCESS LAYERS

OPTIMAL STRUCTURE

AGGREGATE CORRIDOR

MULTIYEAR AGGREGATE LIMIT

MULTILINE PROGRAMS

Example: This analysis can help a risk manager determine that the 5% annual VaR is \$1 million. This means there is 95% confidence (i.e. percentile) that the loss will not exceed \$1 million and there's a 5% chance the loss will be more than \$1 million.

Next, losses are simulated and aggregated with various amounts of risk retained and transferred according to the program options available to the company. At this point, several statistics are calculated to aid in the decision-making process.

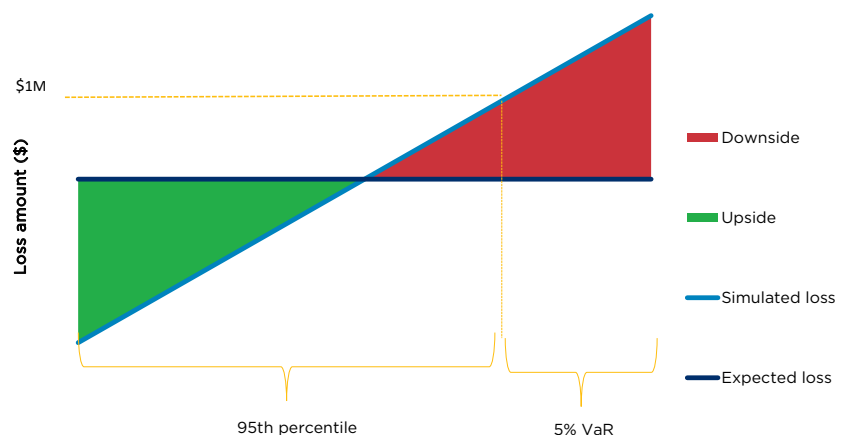
A critical concept in insurance is **downside risk**. Assuming that a company budgets the expected value for retained claims, the downside risk represents any adverse variance to budget. This downside risk can be used to calculate a risk charge. For each scenario where the losses are adverse to budget, that amount would need to be financed by using capital and the capital charges can be calculated accordingly.

Focusing solely on adverse outcomes helps quantify how much money may need to be diverted from other parts of the business or borrowed from outside sources, both of which represent a hidden cost of retaining risk.

Downside risk ignores any scenarios where simulated losses come in favorable to budget.

Value-at-risk (VAR) provides estimates of financial loss at specified probability levels during a period of time. Investors often apply this concept to asset management and portfolio risk. VAR can also be used to estimate the probability that liabilities will exceed various thresholds for risk tolerance testing.

Lockton's DCM approach provides percentiles of risk to supplement calculations in your business as you look at your overall risk portfolio. Although the typical insurance-buying decision focuses on one risk at a time, DCM can be used to aggregate risks of the company to make broader holistic decisions. When correlation exists between the risks, there can be a dramatic increase in VaR.



Financially tailoring the results

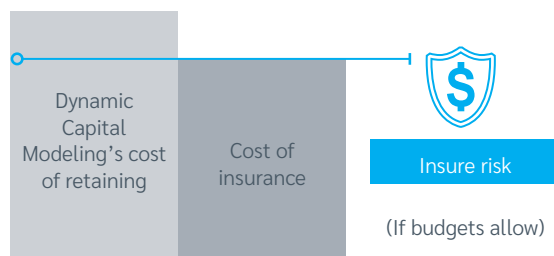
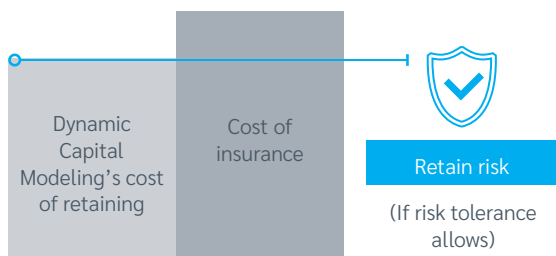
All companies have unique financial profiles and risk tolerances; Lockton's DCM tailors results to internal company goals. This allows the results to be integrated into other corporate decision processes.

DISCOUNT RATE	DESIRED RETURN FOR PUTTING CAPITAL AT RISK	LETTER OF CREDIT RATE	RISK TOLERANCE KEY PERFORMANCE INDICATOR
Recognizes the time value of money. The higher the discount rate selected, the more the model will favor retaining losses versus prefunding losses through the purchase of insurance.	The minimum rate that a company would accept on a risky investment. A higher required rate of return than carriers seek can make transferring losses look favorable because the premium removes this risk, creating certainty.	The rate a bank will charge for a company to obtain a letter of credit (LOC). This is for coverages where collateral is required. An LOC is issued by a bank to an insurer on behalf of a company as a way to guarantee payments in the event that the company defaults.	The materiality thresholds for adverse budget deviations. Programs can be evaluated with the probability that these thresholds are breached to consider not only cost but also breach of internal/external covenants.

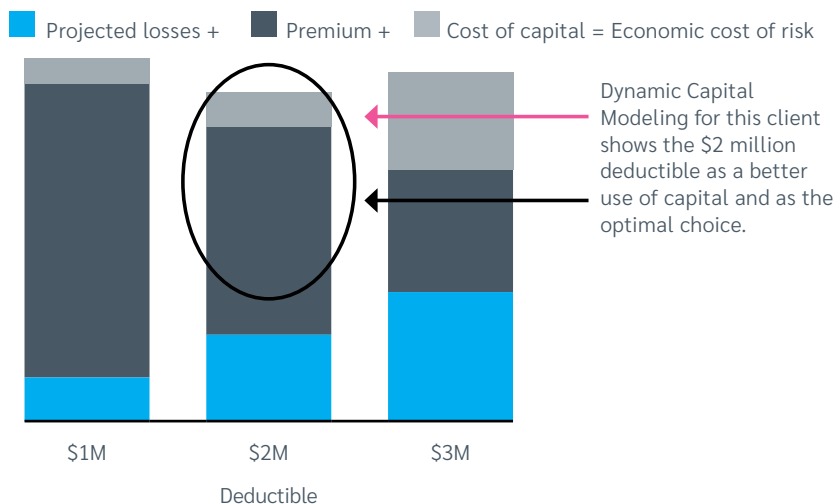
DCM results drive decisions

When trying to determine whether to retain or transfer a layer, DCM will show the cost of retaining risk next to the premium required by an insurer to transfer the risk. The economic cost to retain a layer of risk includes discounted retained losses plus finance charges on adverse deviations from budget, and the cost of collateral (if applicable).

Just because the economic cost to retain a layer may be below the premium, Lockton does not automatically suggest that the company should retain that layer. A check against risk tolerance should also be performed.



MAXIMIZING USE OF CAPITAL



Another frequent scenario involves determining the most economically feasible full program structure. While traditional models consider only projected losses and premium, Lockton's DCM also factors in the finance charges on adverse deviations to provide the economic cost of risk (ECOR) for each option.

If the full cost of one option is known but the premiums are undetermined for a different option, a break-even premium can be calculated to drive the market to develop a favorable alternative.

DCM was designed to assist our clients in making the best decisions regarding retaining and transferring risk. Given limited capital resources, we can help you understand nuances between program options, and determine the most efficient deployment of your capital on risk retention. If you are interested in seeing how Lockton's DCM can help your business optimize your capital at risk, please contact your Lockton team.





UNCOMMONLY INDEPENDENT