ASSET LIABILITY MODELING DFA/ALM

HOW MUCH SURPLUS CAN WE AFFORD TO LOSE IN THE SHORT TERM (WORST CASE) TO MAXIMIZE EXPECTED SURPLUS GROWTH OVER TIME?

The Beacon Pointe/Peer Analytics Dynamic Financial Analysis (DFA) or Asset Liability Modeling (ALM) is a stochastic simulation approach to quantifying multiple types of risk (surplus, net income, risk-based-capital requirements, etc.) by simulating company financial results thousands of times for each asset mix, so that all potential outcomes associated with individual asset mixes can be considered in advance. The analysis embodies a complete insurance company financial model and considers all the interrelationships between the asset and liability sides of the business. The model provides both an expected value and a distribution of possible values for each of the parameters evaluated. The approach allows clients to evaluate the relationships among multiple dimensions of risk: asset risk, underwriting risk, reinsurance risk, and business risk.

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The approach considers all the variables which affect the financial results of the company. By simulating investment, underwriting, and premium growth results we can assign probabilities and provide ranges of potential outcomes given changes in variables. This provides decision makers with an analysis that evaluates the interrelationship among all the various risks that the company faces, rather than simply considering investment risk in isolation.

The analysis offers an integrated perspective of risks, rather than the classic financial analysis in which different aspects of the company were considered in isolation from each other. Specifically, DFA / ALM models the reactions of the company in response to many interrelated risk factors, including both underwriting risks – detailed by lines of business – as well as asset risk and leverage.

The models simulate inflation, real interest rates, the shape of the Treasury yield curve, credit spread levels and their corresponding volatility, stock and bond market returns, the impact of reinsurance, costs to settle liability claims, and premium growth rates.

Interest rates and yield curve shape changes are modeled using the Cox, Ingersoll, Ross methodology which enforces necessary lognormality and mean-reversion. Yields and credit spreads, both absolute level and changes, drive bond returns which in turn impact the various equity class returns.

These fundamental asset return drivers are combined with corresponding asset and liability cash flows and simulated 100 thousand times to develop net cash flow patterns for the company. All of this is done within a framework facilitating the generation of financial statements over the projected period.

The following liability assumptions can be made using statutory Schedule P as a starting point and adjusted as desired.

Premiums are defined as the product of Rate Change, Exposure Change, and Trend draws from separate uniform distributions. A Trend factor provides for a worst-case possibility that rate changes develop a downward trend. Users can define a Percent of Worst assumption as well as a distribution minimum and maximum for Trend.

Losses are defined as the product of a Severity (lognormal) and a Frequency draw (Poisson). Loss frequency rates may include a user assumed potential tendency to Spiral.

LAE are defined as the product of a Severity draw (lognormal) and a Frequency draw (Poisson). LAE frequency rates may include a potential trend.

ULAE increase with Inflation draw plus any user defined adjustment.

Our liability modeling approach was designed by actuaries and vetted by both property casualty and health actuaries as well as an independent actuarial consulting firm. Our models are intended to be transparent and easily understood and vetted by client staff.

Forward looking capital market assumptions (risk, return, yield, duration, and correlations) for individual asset classes and for inflation are input into the model. Assumptions are based on a combination of Capital Market Theory, historical relationships across asset classes, and current market conditions. Our capital market assumptions are intended to be both tactically neutral and conservative. We typically model one or two alternative sets of capital market assumptions to depict the sensitivity of results to assumptions.

Liability assumptions for premium growth, loss ratios, reserve payout patterns, and reinsurance strategy by line of business are made either by Beacon Pointe based on review of historical statutory data or in conjunction with the client actuary.

Risk/reward relationships for a range of potential asset mixes are considered beginning with the client's current asset mix as well as a range of alternative asset mixes.

Finally, we include a DFA/ALM Peer Company Risk Analysis (the same stochastic analysis of individual peer companies) to describe the client's asset, liability and surplus, net income, and Risk Based Capital risk trade-offs in context with those same risk positions of individual peer companies.

We would be more than happy to provide a complimentary review for your business.

Please contact Garth Flint or visit the Beacon Pointe website for more information.