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Insurance Risk Management:
Liability Benchmark

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Liability Benchmark

Risk Management Solutions for Insurers

How to measure the performance of an investment manager with respect to an insurance portfolio?

What is the best attainable match between the assets and the liabilities? How to implement an investment strategy that consists of both a liability hedging portfolio and a return portfolio? All these questions can be answered within the framework of a liability benchmark.

Constructing a liability benchmark

The first step in constructing a liability benchmark is obtaining a clear understanding of the different types of liabilities. This means that all fixed cash flows and embedded options which are present within the liabilities must be accounted for. Ortec Finance's Asset Liability Management (ALM) model supports all commonly offered insurance products, including their embedded options, and is thus ideally suited for this analysis.

After having obtained a clear understanding of the characteristics of the liability portfolio, a replicating portfolio is constructed. This replicating portfolio consists of investment instruments that mimic the characteristics of the liabilities.

More precisely, the replicating portfolio should generate the same payoffs as the liabilities for a large variety of economic scenarios. To achieve this replication, one may think of bonds or swaps to reproduce the guaranteed (best-estimate) cash flows (premiums, benefits and costs). Swaptions may also be needed to replicate profit sharing options, which typically become expensive for high interest rates. Stock options are also important in case of investment policies (such as Unit-Linked contracts) with return guarantees or insured pension contracts with guarantees.

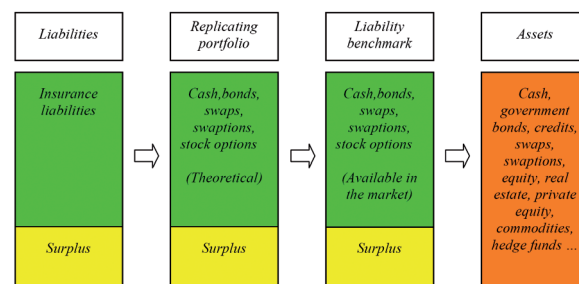
The instruments defined in the replicating portfolio will often contain illiquid or non-traded instruments. Profit sharing is for example often based on a moving average of the interest rate. Such an option can only be replicated precisely with an exotic (Asian) swaption.

Option maturities can also be extremely long, due to the length of the underlying insurance contracts. The replicating portfolio is thus only a first step to provide more insight in the type of investment instruments that are needed to match the liabilities. As a next step, the replicating portfolio is translated into a practical liability benchmark. For each of the investment instruments defined in the replicating portfolio, a traded instrument is selected that resembles the instrument in the replicating portfolio as good as possible. The liability benchmark is thus the best matching practical counterpart of the replicating portfolio. Ortec Finance's ALM model allows you to evaluate how well this benchmark matches with the actual liabilities.

Applications

Given a liability benchmark one has a powerful tool to evaluate the performance of an investment manager whose goal is to match the (return on the) liabilities. The highly complicated insurance liabilities are translated into a basket of familiar investment products (cash, bonds, swaps, swaptions, stock options, etcetera) which are easy to price and monitor on a day-to-day basis. A clear benchmark to measure the investment manager's performance is created this way. A liability benchmark also fits naturally within the concept of a separate liability hedging portfolio and a return portfolio. For asset and liability calculations or asset mix optimizations, the liability benchmark may also be used as a proxy for the liabilities when it is desirable to speed up the calculations.

The following figure shows schematically how a liability benchmark is constructed.



Step-by-step construction of a liability benchmark