ThetaSuite

Strategic Asset Liability Management

The Challenge in Asset Liability Management

The financial crisis as well as new regulations (e.g. Solvency II) have a strong impact on risk management. The evaluation of economic indicators and scenarios is therefore indispensable for the Management of corporates groups. It is the basis for coping with current problems like e.g. high market volatility, the demand for liability and cash flow projections or new necessities of refinancing.

Asset Liability Management

Asset Liability Management (ALM) is used by companies to balance their assets and liabilities, generally in a way that liabilities can be served with a given (high) probability. The main techniques of ALM are to minimize the mismatch between assets and liabilities either by duration, fx-analysis or liquidity gap analysis, or more generally using different possible future scenarios for a broad range of risk drivers.

Strategic ALM

Strategic ALM is a top down approach that can be used to steer the mismatch from the neutral position so that the company's overall goals are met. Strategic ALM is based on a simulation of the company's long term development. The results are used to find the short-term strategy that is best suited to achieve the long-term goals.

Strategic ALM supports et al. the following challenges:

- Control of divisions at group level
- Development of dynamic strategies
- Alignment of short-term strategies to specified and superior company goals
- Connection of individual indicators in order to improve overall forecast reliability
- Optimization of the asset portfolio

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Engineering in Finance

Goals and Methodology

Goals and Design

Financial decisions must make sense for the stakeholders in the company i.e. customers, share- and bond-holders. The main goal of Strategic ALM is to shape the target risk and return profile of the firm value projection. Different risk/return profiles of the assets influence how well the different priorities of the stakeholders are achieved.

The preferences or targets of the company must be expressed in an abstract objective function which can e.g. include terms that measure the total return of investment for shareholders, the risk of bankruptcy or different regulatory constraints. By evaluating the objective function for different company strategies a set of close to optimal strategies can be found.

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Implementation

The future development of the firm is modeled in a firm model for a large set of scenarios. From the projected stochastic economic balance sheet we derive all quantities we wish to use in the steering. The steering quantities are translated to the objective function which is evaluated for the asset allocations and averaged over all scenarios.

Powerful numerical simulations are needed to achieve the balance sheet projection used in SALM. The coupled multiperiodic simulation of assets and liabilities needs an advanced software tool which is able to solve the nested simulation problem as well as calculating conditional and unconditional expectation values.

The Thetaris Theta Suite performs the needed simulation with a high numerical efficiency and provides an effective development environment. Thetaris and its cooperating partners have experience in developing the design of strategic ALM steering modules at leading insurance companies.

This screenshot shows the Theta Suite from Thetaris .
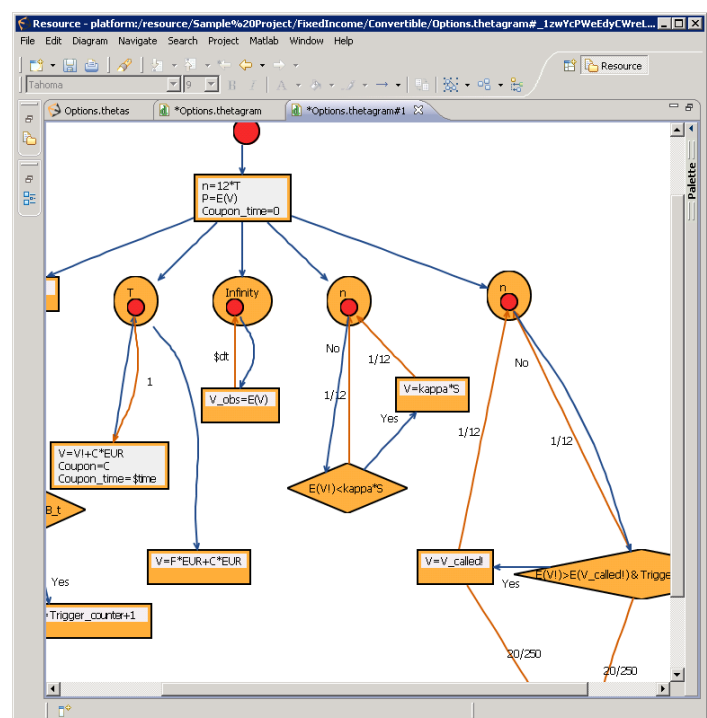
Outcome

Case study: SALM modelling with Theta Suite

One of the unique features of the Theta Suite software is the ability to model and analyze investment decisions from a top level perspective. In the case described here it was important that the model could be documented precisely. Designing the model in ThetaML made the complexity accessible and allowed various experts in specific fields to contribute to the model.
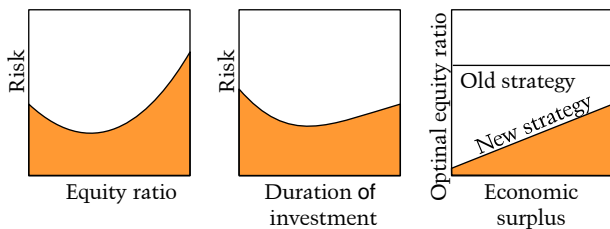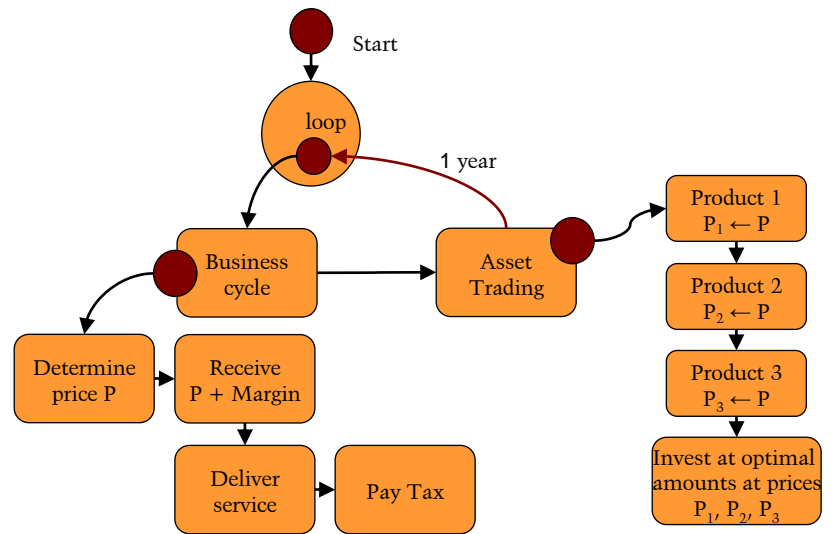
The focus of the analysis was the optimal ratio of investments in three different asset classes. Thus it was important to model the relevant aspects of the company's ongoing business. Obtaining an understandable model was more important than covering every aspect in great detail. Some simplifications had to be applied to the models for insurance loss distributions, customer behavior and business cycles.
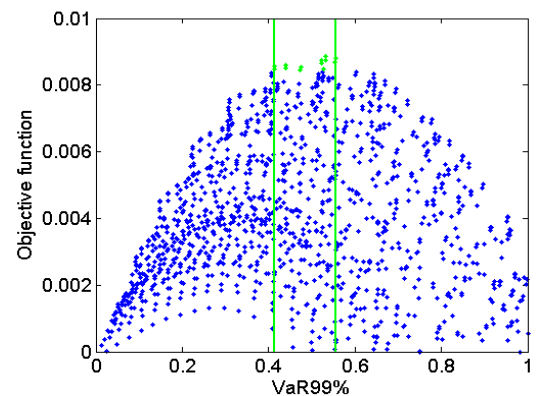
This figure contains the results for a SALM insurance company prototype. Each blue dot represents a sampled asset allocation for which the firm model is evaluated for each asset and insurance scenario. The green lines represent an upper and lower limit of the market risk VaR99%. The objective function measures the total return on investment for the shareholders and the ruin probability of the company.

What can Strategic ALM tell you?

Conducting a SALM analysis can answer the following questions:

- How well do different strategies fulfill the stakeholders' preferences?

- How far can the risk be minimized with limited financial resources?

- What is the optimal asset strategy for individual lines of business?

- How does the diversification between the different lines of business affect the optimal strategy for the whole company?

Implementation of Strategic ALM in your company

The SALM methodology is targeted at strategic management and particularly CFOs.

– It facilitates optimization of the firm value through the combination of an integrated business model on management level with detailed low-level quantitative models for unsurpassed control and clarity.

– It increases the ability to plan and control investment strategies companywide and optimizes the firms liquidity, risk profile and its hedging policies.

What can SALM do for you? Contact Thetaris today for a presentation.

THETARIS
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Thetaris is a solution provider for the financial industry. Combining state-of-the art financial mathematics with modern informatics, we serve the community by providing tools to enable Computer Aided Finance.

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