Realistic scenarios for ALM

More realistic scenarios for ALM are necessary and possible

Why do we have ALM and why do we need scenarios? Because we do not have a crystal ball, and with the help of scenarios we can prepare for possible future shocks and make contingency plans to prepare.

However, institutional investors increasingly notice that the results of an ALM study become irrelevant almost immediately or shortly after the ALM exercise. Why is that?

Traditional statistical models use historical relationships to create future scenarios. If there are no comparable historical precedents (think of Brexit, Covid-19, demographic developments, blockchain, etc.), a future scenario based on an extrapolation of the statistical past, however intelligent, becomes nothing more than a guess. It is therefore not surprising that most of you have had the frustrating experience of ALM results not being very realistic or useful. Yet you continue working with them, having no other viable alternative.

It is not an ideal situation and that is why we - Triple A - Risk Finance in collaboration with LINKS Analytics, have worked on a solution to achieve a better ALM process.

ALM in itself is a useful tool to look at the development of the relationship between assets and liabilities in given scenarios.

As with any model, the outcome of the model is determined by the input. The limited usefulness of the results of ALM can therefore be attributed more to the ineffectiveness of the statistically generated scenarios that are used as input, rather than to the concept and goal of the ALM model itself.

Some institutional investors try to circumvent this problem of unusable scenarios generated in a conventional (statistical) way by creating discrete scenarios. That goes along the lines of "stocks fall 30% and interest rates rise 50 basis points" or "inflation versus stagflation". The problem with these types of approaches is that they are not linked to a consistent pass-through of economic triggers and "real-life" relationships in the economy, as well as an adequate "translation module" into financial assets.

We have developed a better and transparent solution to this problem. Conventional statistical models assume that we know nothing about the future. Every statistically generated scenario in ALM is equally likely. However, we know with a considerable degree of certainty quite a few things about the future, particularly when it comes to structural elements such as demographics. This knowledge can be processed consistently in scenarios. This, in a nutshell, is how we developed a significantly improved scenario input for ALM.

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The shortcomings of the current ALM process

Overly dependent on one set of initial inputs:

In any statistical model such as ALM, the outcome is determined by the input. Whether you are running 1,000 or 10,000 scenarios, the outcome will always be around the "average expectation". For example, if you have an average interest rate of 3% over the past 50 years, ALM will by definition underestimate the probability of a negative interest rate - and therefore the risk in investment portfolios. If you were to adjust this "manually", the problem of consistency (the quality of the working method) will come into play.

Ignoring actual knowledge about today and tomorrow:

The traditional ALM approach assumes an agnostic world in which we know nothing about the future or even the present. In the stochastic ALM environment, each scenario, based on the statistical relationships in the past, is equally probable. However, we do know what today's reality looks like for many relevant input data from ALM. For instance, we know that the consumption expenditure of pensioners differs greatly from their consumption behavior before they retire. This affects our future scenarios in an aging world. This up-to-date knowledge can and should be included in our investment allocation decisions.

ALM in its current form makes the Board reactive instead of proactive:

Before the entire ALM process runs its course, a Board is often confronted with a world that already looks different from the start of the ALM process. The Boards do not have the toolkit to anticipate "real world" events, nor do they have the ability to relate the movements they see quarterly or annually to ALM results and then make adjustments. This usually leads to the conclusion: "our ALM assumptions are no longer valid".

Theoretical, deterministic scenarios are rarely useful:

Quite a few institutional investors use deterministic scenarios such as "inflation versus deflation" to overcome the problem of the lack of comparable historical events. These hypothetical scenarios, although probable, are calculated on basis of historically observed relationships, and not real-life triggers and trends. In essence the deterministic scenarios are not a solution, but more of the same in a different guise.

*How can you make deterministic **and** realistic future scenarios?*

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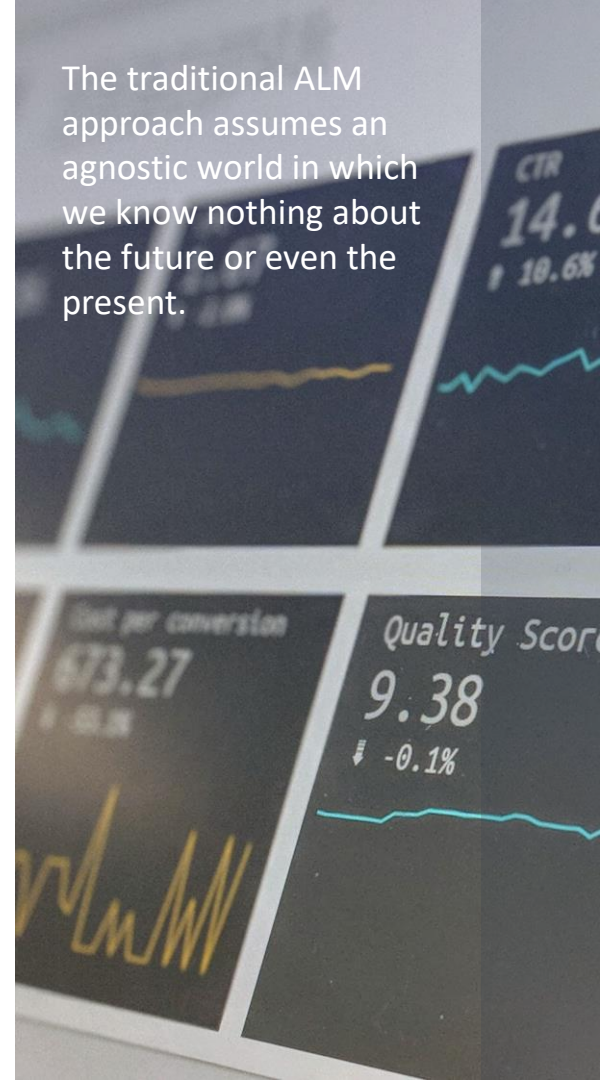
Future scenarios based on current economic relationships

Scenario analysis is a process of examining and evaluating possible future events and their impact on the economy and / or financial markets. To create realistic economic scenarios that can be used as input for ALM, these scenarios must meet several criteria:

1 Scenarios must relate to the economy of today and tomorrow:

It is not enough to develop a hypothetical stagflation scenario if we cannot plausibly demonstrate how that stagflation can arise from the current situation, what can trigger it, and the path along which that stagflation proceeds. To illustrate, consider a realistic and current scenario that looks at the consequences of Brexit. Brexit can lead to a shortage of products and services, resulting in lower production and higher prices. Since this is a specific scenario, we can investigate this further and look at the possible magnitude of the impact and specific measures that can be taken to soften the impact and then draw up a contingency plan for when this event happens.

2 Scenarios must be "long-lasting" and material:

Since ALM's horizon is typically 15 years, it is more appropriate to consider structural changes in the scenarios rather than looking at the (possible) course of the business cycle. You can think of raising the retirement age in Europe to 70 years, with all that it entails for the size of the labor force and economic growth.

3 Scenarios must be usable for interim adjustments:

Scenario analysis will be meaningless without the ability of the Board to use the study conclusions during the life cycle of ALM study. It helps to have scenarios rooted in the actual economic reality, but in addition, scenarios should anticipate possible triggers for future events and have corresponding action plans should those triggers occur.

"The question, however, is whether and to what extent historical averages can be applied to the future."

BpfBOUW has been using deterministic scenarios in the ALM studies for years to map out the consequences of various possible developments. In the "traditional" approach to ALM studies, long-term equilibrium values are assumed based on historical averages and relationships. Various probability calculations then follow from the stochastic analysis and, of course, sensitivity analysis can also be performed on specific variables.

The question, however, is whether and to what extent historical averages can be applied to the future. It therefore helps us enormously to gain insight into the outcomes of specific integrated scenarios that we consider plausible and / or regard as high risk. A well-founded and consistent "storyline" of those scenarios helps to better understand the outcomes and sensitivities.

Linda Teer, Manager Investments, bpfBOUW

# Improved scenario input for ALM in practice

The point of scenarios is not to pick the most likely one; that would mean having a crystal ball. A more appropriate use of scenarios is to prepare and enable the Board to act proactively. Having analyzed the key scenarios that could have a significant impact on future returns, the Board is able to anticipate and recognize events and take appropriate policy-related actions consistent with ALM already in place.

A typical scenario-based ALM process begins with a workshop for the Board and other stakeholders. During this workshop, the major long-lasting trends in the economy and the ranges of expected results are introduced:

- **Aging**
- **Climate change and related energy transition**
- **Automation and innovation**
- **Developments in world trade and globalization**
- **Regional competitiveness**
- **Investments in human capital**

Preparation for scenario-based ALM

LINKS and Triple-A provide all the required supporting information for the Board to form and articulated the scenario inputs during the workshop. At the end of the workshop the fund will have defined the reasonable inputs for the scenarios. Following the workshop, fully worked out return expectations – Scenario Sets are introduced to the Board.
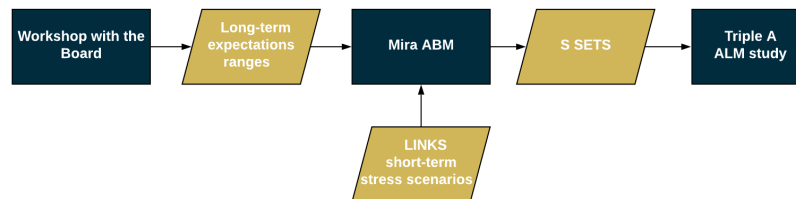
Development of the swap curve under 3 different scenarios

The Scenario Sets contain the full development of the average expected return per year for all investment categories and the yield curves for discounting the liabilities under different scenarios.
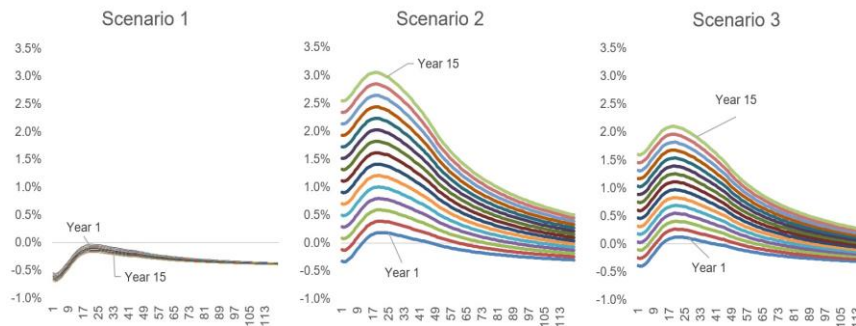
Improved scenario input for ALM in practice

During the ALM study process, the ALM service provider in close collaboration with the customer assesses the possible policies available for steering the fund. The possible policy instruments here are:

1. **Change of SAA weights**
2. **Change of the rebalancing bandwidths of the SAA weights**
3. **Change in target level for interest rate hedging against liabilities**
4. **Change in the trigger levels of the target interest rate hedge against liabilities**
5. **Applying or changing hedging instruments for currency, equity or credit risk**

Scenario analysis is meaningless without the possibility for the Board and investment committee to use the results in the period between ALM exercises. Having actual economic scenarios is already useful. But in addition, scenarios must be supplemented with well thought-out **triggers** and **action plans**.

Triggers: Identifying the causes (triggers) of a particular scenario occurring helps the Board to recognize when a particular scenario becomes likely. Example of a trigger: The government is planning to increase the wealth tax to finance the introduction of a universal basic income.

Plan action: preparing board decisions to be taken by identifying triggers and determining in advance what should happen if the trigger occurs (increasing the hedge relative to the liabilities, increasing the allocation to shares or broadening the bandwidths around standard weights within the strategic investment portfolio).

The scenario-based ALM process

The final step is for the Board to approve a scenario-based trigger and action plan. The management process thus becomes proactive and anticipates changes in the economic and geopolitical environment.
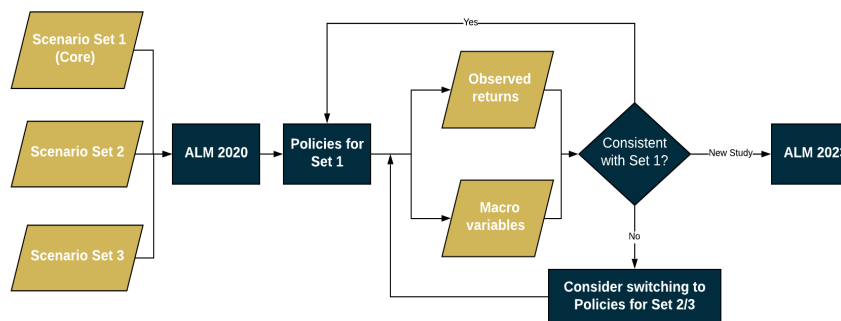
Scenario-based ALM: a reality today

LINKS Analytics and Triple A - Risk Finance help pension funds and insurers conduct consistent scenario-based ALM studies.

LINKS Mira ABM is a strategic risk and return management tool that translates world views into consistent scenarios. Mira ABM is fully integrated with the ALM model of Triple A - Risk Finance, whereby scenario triggers and policy sets are included in the assessment as standard. With this integration, the scenario-based ALM management process can be successfully implemented.

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