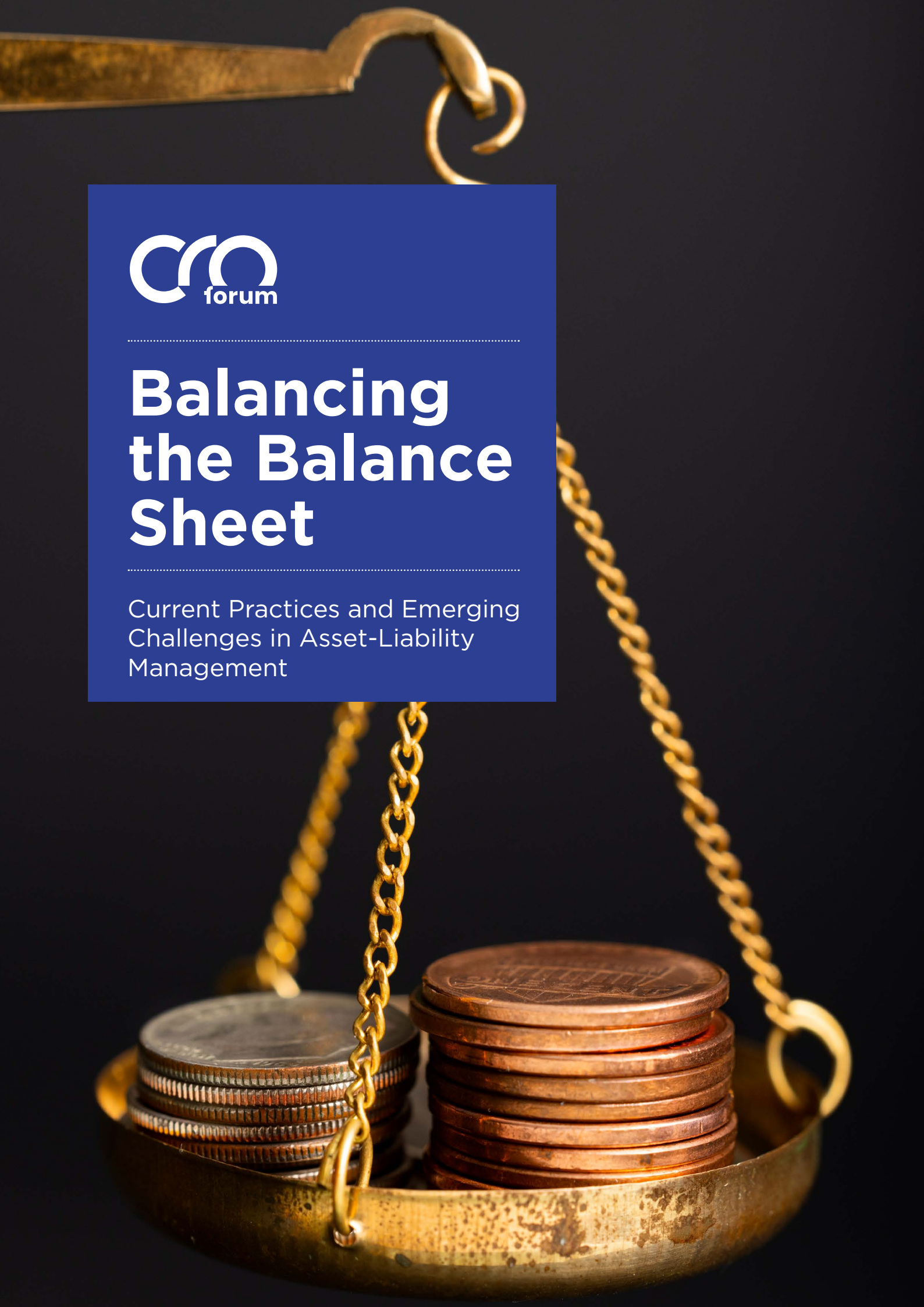


Balancing the Balance Sheet

Current Practices and Emerging Challenges in Asset-Liability Management

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Executive summary

Asset-Liability Management (ALM) is a cornerstone of (re-)insurance balance-sheet management. In an environment characterised by higher interest-rate volatility, increased allocations to illiquid assets, evolving accounting and regulatory frameworks, and growing focus on liquidity resilience, effective ALM has become more important than ever.

To better understand current industry practices, the CRO Forum conducted a survey among member companies and supplemented the results with working-group discussions and practical case studies. The survey confirms that while ALM frameworks differ across firms depending on business model, liability profile and regulatory environment, several common themes have emerged.

Survey responses suggest that ALM is increasingly viewed as an **integrated balance-sheet steering discipline** rather than a pure risk-matching exercise. **Protecting solvency** remains a primary objective for many firms, while **liquidity resilience, economic value preservation** and **financial performance** are also key considerations. As a result, (re-)insurers increasingly rely on a combination of complementary metrics rather than a single optimisation target. The survey further indicates that effective ALM depends on robust **governance** and close collaboration between Risk, Investments, Finance and Actuarial functions. While organisational responsibilities vary considerably, clear ownership, effective decision-making and independent challenge consistently emerge as characteristics of mature ALM frameworks.

Recent market developments have also highlighted the growing importance of **liquidity** within ALM. The increasing use of illiquid assets, collateral requirements and heightened regulatory expectations have reinforced the need to integrate liquidity considerations more closely into ALM frameworks and decision-making processes. Although the degree of integration varies across firms, liquidity is generally managed through constraints, buffers and stress-based requirements rather than as a performance metric to be optimised.

Similarly, **validation** practices continue to evolve. Validation is no longer limited to testing technical model components but increasingly extends to key assumptions, management actions and observed balance-sheet behaviour under stress conditions.

Overall, the survey findings demonstrate a high degree of ALM maturity across the industry. At the same time, the diversity of approaches observed amongst participants confirms that there is no universally optimal ALM framework. The objective of this paper is therefore not to define a single best practice, but to share industry experiences, highlight common themes and support continued development of ALM capabilities across the insurance sector.



1. Introduction

ALM plays a central role in (re-)insurance balance sheet management, supporting decisions on investments, liabilities, capital and liquidity. In recent years, insurers have operated in an environment characterised by prolonged periods of low interest rates followed by rapid monetary tightening, increased market volatility, growing allocations to private and illiquid assets, evolving accounting and regulatory frameworks and heightened attention to liquidity resilience. These developments have brought renewed focus to the role of ALM in balancing risk, return and financial resilience across the enterprise.

At the same time, ALM practices continue to differ considerably across firms. Insurers operate under different business models, liability and cash-flow structures after reinsurance, investment strategies and regulatory environments. Consequently, decisions regarding governance, objectives, metrics, risk appetite, liquidity management and validation are often tailored to firm-specific circumstances. While regulatory frameworks provide important principles and requirements, there remains relatively little publicly available information regarding how insurers implement ALM in practice.

In line with its objective of sharing industry practices and risk management insights, the CRO Forum surveyed member firms on a range of Asset-Liability Management topics.

The survey was conducted in May 2026 and complemented by working-group discussions and practical case studies, providing an overview of current approaches, common challenges and emerging trends across the industry.

The findings demonstrate that effective ALM increasingly depends on the interaction between Risk, Investments, Finance and Actuarial functions. While interest-rate management remains an important component, firms are increasingly required to balance a broader range of objectives, including solvency protection, liquidity resilience, profitability, accounting considerations and long-term value creation. These objectives are often interconnected and occasionally competing, requiring robust governance, effective decision-making and a clear understanding of trade-offs.

This paper provides an overview of current industry practices across key ALM topics including governance, objectives and metrics, market risk drivers, liquidity management, validation and emerging developments such as advanced analytics and artificial intelligence. Rather than prescribing a single approach, it presents the perspectives and experiences of CRO Forum members with the aim of supporting further discussion and development of ALM practices across the insurance industry.



2. ALM Governance and Operating Model

1. Why ALM governance matters

ALM is a key part of an insurer's approach to risk management, acting as a transversal discipline linking liabilities, assets, risk, capital and profitability. It is the mechanism that ensures a (re-)insurer can deliver on its promises, stay solvent under stress and run a sustainable, well-controlled balance sheet over the long term.

Effective governance is essential to embedding ALM at the centre of an organisation's decision-making framework. An ALM Policy may, for example, set out key principles and responsibilities across accountable C-suite individuals and senior governance committees/boards. The ALM Policy and broader supporting infrastructure should provide a solid foundation for the monitoring and control of various risks identified for an insurer (e.g. market, credit, rates, inflation, currency). A well-governed ALM framework supports not only regulatory compliance, but also strategic balance-sheet management and long-term value creation.

2. Regulatory framework as a baseline

The core prudential framework is provided by Solvency II and Solvency UK:

- Article 41 requires insurers to implement an effective system of governance including written policies for key areas of risk management.
- Article 44(2) states that the risk management system must cover ALM and Article 260(b) of the Delegated Acts defines what ALM must do operationally, including documented risk management processes and controls and clear governance, monitoring and reporting arrangements
- Additional specific requirements exist for insurers that apply the Matching Adjustment (Article 77, supported by delegated regulation)

Many insurers have moved beyond Solvency II (and similar regimes) by embedding ALM as a core strategic, financial and operational capability, rather than treating it as a compliance exercise. Most insurers now treat ALM as a core strategic discipline integrated into business planning and capital allocation, with governance evolving from an 'oversight-only' model to being embedded in an active, decision-driving control framework.

This regulatory dominance is also reflected in market practice: CRO Forum survey results indicate that Solvency II and International Financial Reporting Standards (IFRS) are the primary valuation frameworks influencing ALM decisions, underscoring the central role of regulatory perspectives relative to local generally accepted accounting principles (GAAP) and internal economic views.

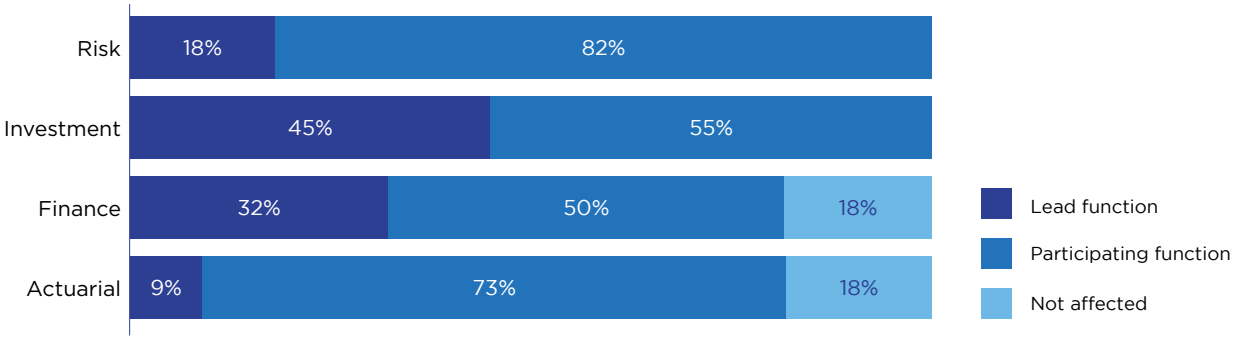
3. Core principles of effective ALM governance

A robust ALM governance framework requires clearly defined roles and responsibilities across all levels of the organisation, with ultimate accountability residing at Executive and board level. The Board is responsible for setting the overall risk appetite and approving key ALM policies, while senior management ensures execution and oversight. Clear ownership of ALM decisions (e.g. asset allocation, hedging strategies) avoids ambiguity and strengthens decision-making accountability.



Areas in which the ALM process is anchored

Survey question 2.1: In which organisational area(s) is the ALM process anchored?



CRO Forum ALM survey results point out that ALM spans several functions and is generally anchored in the first line (investment and finance functions) as expected under the three lines of defence model. C-suite responsibility for ALM is mainly concentrated in the CIO and CFO roles (both ~32%), with CRO participation also significant but lower, reflecting a shared but primarily finance and investment-driven ownership model.

Governance structures typically include an Asset-Liability Committee (ALCO) as the central body, working closely with Risk, Investment and Executive Committees to ensure alignment with the overall strategy and risk framework. ALCO reviews key metrics, makes tactical decisions and escalates material issues.

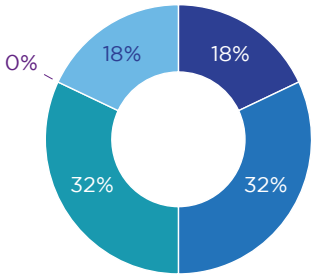
ALM must be embedded in key business decisions such as asset allocation, product design, reinsurance and capital management, ensuring consistency with balance sheet capacity and risk-return objectives.

In insurance groups, governance balances central oversight with local execution: the group defines policies and limits, while subsidiaries operate within them, supported by clear escalation processes and consistent reporting.

ALM process: responsibility, implementation & monitoring

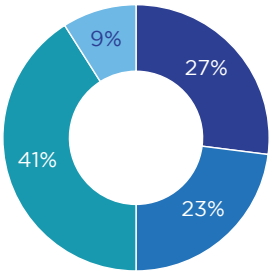
Survey question 2.2: Who holds the responsibility for the ALM process?

Responsibility



- Chief Risk Officer (CRO)
- Chief Investment Officer (CIO)
- Chief Financial Officer (CFO)
- Chief Actuary
- Other
  - 4.5% Group of experts
  - 4.5% CRO+CA+CIO
  - 4.5% MD Reinsurance & Investments
  - 4.5% Asset Liability Committee

Implementation & monitoring



- Predominantly at the level of legal entities
- Predominantly at group level
- Equally at both levels (group and legal entity)
- Other
  - 9% Conditional (depends on business line or with group oversight)

In line with this governance structure, survey results also show that implementation and monitoring are primarily conducted equally at both group and local levels. While this model promotes compliance with local regulatory and business requirements, it also creates complexity at group level, as optimisation is constrained by fragmented local requirements rather than a single integrated ALM view. As a result, governance frameworks need to balance local accountability with mechanisms that enable effective coordination and strategic decision-making across the group.

4. ALM reporting and information flows

Effective governance also relies on high-quality ALM reporting that is forward-looking, actionable, concise, reliable and timely.

Reports include metrics such as solvency, liquidity and sensitivities and must align with strategic objectives and risk appetite to enable timely decision-making when deviations arise.

CASE STUDY

Restrictions on access to certain asset classes

In some markets, foreign insurance firms may face regulatory restrictions on the types of assets they are permitted to hold. This can lead to sub-optimal strategic asset allocations.

For example, in Taiwan, offshore investors face significant regulatory and operational restrictions when seeking to invest in TWD-denominated fixed income, leading to challenges in managing interest rate risk. Alternatives to TWD fixed income may include interest rate derivatives, which tend to be less liquid, costly and available only for short maturities or cross-hedging with other currencies, which gives rise to basis risk.

Another example relates to the Chinese fixed income markets: the onshore market (CNY) is liquid and easily accessible provided the company has a local operation, whereas the offshore market (CNH) is smaller and less liquid. Thus, a reinsurance firm assuming CNY-denominated liabilities but without a local Chinese operation will face challenges in finding suitable fixed income assets to match its liabilities.

5. Risks and consequences of weak ALM governance

Weak ALM governance can have serious consequences for organisations, negatively affecting both shareholder and policyholder returns. In some cases, a failure to identify and address asset–liability mismatches – and to mitigate them in a timely manner – has led to insolvencies and bankruptcies.

Some governance failure patterns observed in the past relate to:

- **Failures to identify and address correlations and interactions between various risks (especially market and non-market risks)**, which may be the result of siloed decision-making (e.g. actuaries, risk management and investment teams operating independently), leading to disconnection between investment strategies and liability profiles in terms of duration and liquidity. A recent example is the rapid increase in yields and inflation, which triggered dynamic lapse behaviour not previously experienced and not integrated into ALM models.
- **Modelling and assumptions breakdown**, whereby data and assumptions are not stress-tested in a holistic manner across models. For example, dynamic policyholder behaviour and its link to rising yields was not reflected in historical data and was therefore not considered in prevailing assumptions.
- **Oversimplified asset valuation**, where ALM models do not fully capture the embedded optionality and liquidity risks of complex derivatives or assets and their potential correlation with dynamic policyholder behaviour and liability-embedded options.
- **Rapid growth or yield enhancement strategies** that pursue high returns on the asset side (e.g. high-yield risky assets, duration mismatches, high concentrations) while disregarding liability profiles, especially under rapidly changing economic conditions or stress scenarios.
- **High ratios of illiquid assets** in the investment portfolio, exposing insurers to the risk of a surge in policyholder withdrawals.

To address these issues, the ALM governance should integrate diverse perspectives and assumptions, assess risks holistically and under severe scenarios and provide full transparency of asset–liability positions and the underlying assumptions and limitations. The ALM strategy should be fully aligned with the risk appetite. It should adapt quickly to rapid developments under stress situations, integrating new correlations and assumptions in a reliable manner.

6. Interplay between regulatory and market-consistent frameworks

ALM governance should take into account local regulatory frameworks and restrictions. Differences between local and group-level regulation can lead to sub-optimal outcomes.

As evidenced by the survey, most firms anchor their ALM framework to European/UK Solvency II or IFRS standards. Firms must balance regulatory compliance with economic value creation, increasing the need for dual steering frameworks and reconciliation across metrics. Accounting views can materially influence ALM decisions, sometimes outweighing regulatory considerations in specific segments.

Key valuation framework influencing ALM

Survey question 2.3: Which valuation frameworks have the most significant influence on your company's ALM framework?





Key takeaways

Effective ALM governance requires a clear framework that balances multiple objectives and perspectives across the organisation. Survey responses indicate that successful ALM processes are characterised by well-defined roles, strong cross-functional collaboration between risk, finance, actuarial and investment functions and regular senior management involvement. As ALM frameworks become more sophisticated, governance plays a critical role in ensuring that assumptions, methodologies and management actions remain transparent, consistent and aligned with the company's strategic objectives. The governance structures described above ultimately determine which ALM objectives and metrics are prioritised and how trade-offs between competing objectives are resolved.

3. ALM Targets and Metrics

While Article 44 of the Solvency II Directive explicitly includes ALM within the risk-management system, it does not provide a comprehensive definition of ALM. Instead, the broader Solvency II framework embeds ALM-related principles across investment, risk management, governance and Own Risk and Solvency Assessment (ORSA) processes. Responses to the CRO Forum questionnaire confirm that ALM is a cross-functional discipline spanning Risk, Investment, and Finance, with significant variation in practices across firms.

The results show that ALM involves balancing multiple objectives rather than optimising a single metric. Effective balance sheet steering requires continuous trade-offs between solvency protection, economic value preservation, liquidity resilience, profitability, and accounting outcomes. Interestingly, Solvency II sensitivities are widely used even by firms whose primary objective is economic value protection, suggesting that Solvency II has evolved into a common language for ALM steering rather than merely a regulatory reporting framework.

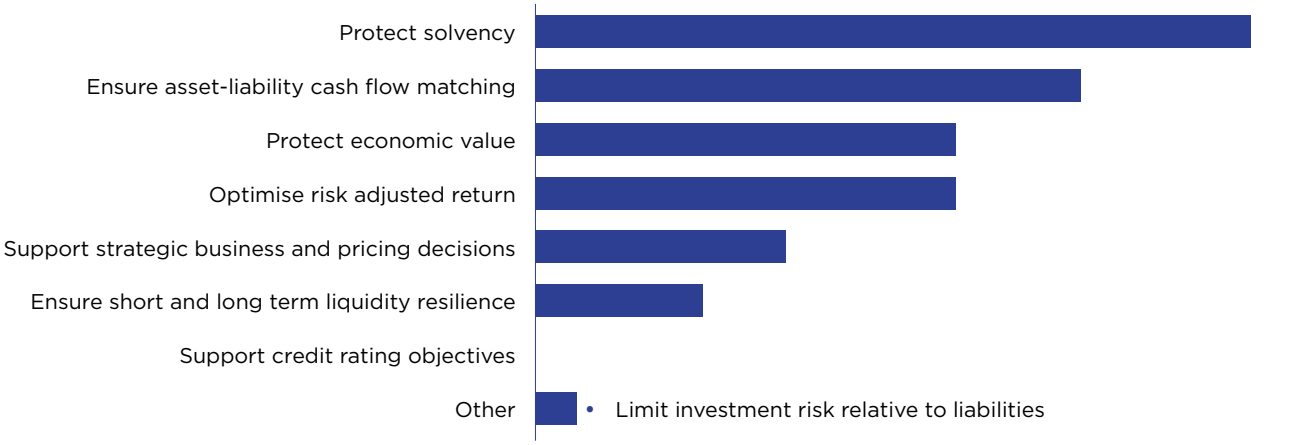
Overall, there is no universally optimal set of targets or metrics. Instead, robust ALM frameworks rely on a combination of complementary indicators, informed judgement, and strong governance to balance competing objectives and support consistent decision-making.

1. What insurance companies aim to achieve (objectives)

Protecting solvency has emerged as the dominant ALM objective. Traditionally, however, insurance ALM focused on protecting own funds through the effective matching of asset and liability cash flows. Given the long-term nature of insurance liabilities, managing interest rate risk and protecting embedded value became the primary objectives of ALM. Effective cash flow matching reduces reinvestment and refinancing risk, stabilises earnings, and helps ensure that policyholder obligations can be met as they fall due.

Primary objectives of the ALM framework

Survey question 3.1: What are the primary objectives of your ALM framework? Multiple Choice, select up to 3.



The introduction of Solvency II in 2016 increased the importance of solvency considerations by placing a market-consistent and risk-sensitive capital framework at the centre of regulatory oversight and management reporting. While economic value creation and cash flow management remain fundamental objectives, the results indicate that solvency protection has become the primary lens through which ALM decisions are evaluated. Many practitioners may recognise a gradual shift over the past decade, with a further acceleration in recent years. The Solvency II ratio has become a widely observed indicator in management communication, regulatory dialogue and external stakeholder reporting. Consequently, solvency considerations increasingly influence strategic decision-making, capital management and risk appetite frameworks.

Nevertheless, ALM remains a multi-objective discipline. Alongside solvency protection, insurers continue to preserve economic value, maintain adequate liquidity, and generate sustainable returns.

Balancing these objectives is central to effective ALM. Measures that strengthen solvency may reduce expected returns or constrain investment flexibility, while strategies that maximise economic value can increase volatility in regulatory capital metrics. A robust ALM framework therefore recognises and manages these trade-offs while ensuring resilience under both normal and stressed conditions.

Current discussions such as the IASB's Risk Mitigation Accounting (RMA) project illustrate the challenges of representing dynamic interest rate risk management and hedging activities in financial reporting. Together, these developments reinforce the importance of a consistent view across Risk, Investments and Finance, ensuring that economic risk management objectives, management actions and financial reporting remain appropriately aligned.

2. How do insurance companies steer ALM

ALM targets translate strategic objectives into operational constraints, risk limits, and steering boundaries. The survey highlights that firms employ a wide range of target types, reflecting differences in business models, liability characteristics, risk appetite, accounting frameworks, and regulatory environments. While some organisations focus primarily on solvency protection and capital efficiency, others place greater emphasis on earnings stability, liquidity resilience, or economic value preservation.

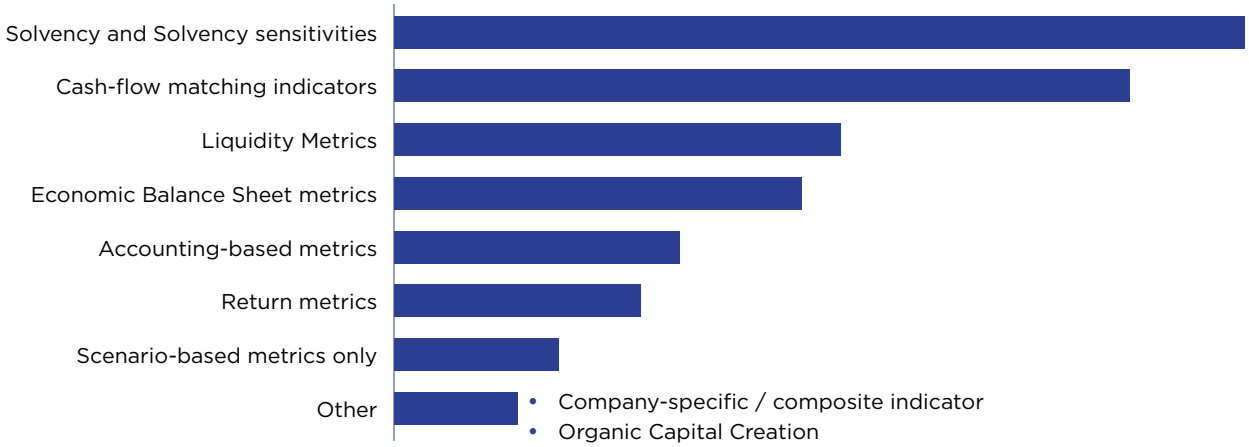
- Solvency targets, such as maintaining the Solvency II ratio within a predefined range and limiting sensitivities to market stresses.
- Market-consistent value targets, including limits on Net Asset Value (NAV) or Economic Value of Equity (EVE).
- Cash-flow and duration targets, such as duration gap limits or cash-flow matching requirements.
- Liquidity targets, including minimum liquidity buffers, stress survival horizons, and minimum immediately tradeable assets (ITA) levels.
- Accounting and earnings targets, for example limits on P&L, Earnings-at-Risk (EaR), or OCI volatility.

ALM frameworks typically combine multiple regulatory and internal targets across different dimensions. Common examples include solvency ratio limits, interest rate and spread sensitivities, duration mismatch constraints, liquidity buffers, earnings-at-risk measures, and strategic asset allocation ranges. However, regulatory measures alone do not always capture a firm's broader economic objectives. Many insurers therefore complement Solvency II metrics with internal targets aligned to their business strategy and net liability profile after reinsurance, such as strategic foreign exchange exposures (Case Study 4), earnings stability targets, liquidity resilience under idiosyncratic stress scenarios, or long-term capital management objectives.

Qualitative responses to the survey suggest that although Life and non-life insurers generally use the same ALM targets and risk management tools, their application differs because of the underlying liability characteristics. Life insurance requires a more liability-driven approach, reflecting longer durations, illiquid liabilities, policyholder guarantees, profit-sharing features, and shareholder

ALM steering & decision making

Survey question 3.2: Which metrics are actively used as part of your regular ALM steering or decision-making process (not merely calculated or reported)? Multiple Choice.



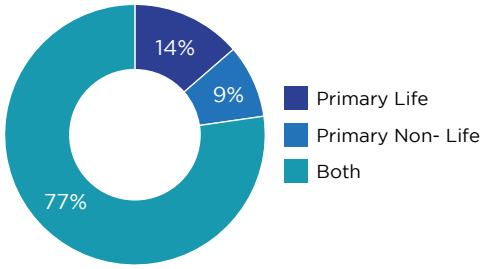
[1] https://www.ifrs.org/news-and-events/news/2025/12/iasb-proposes-new-accounting-model-interest-rate-risk/

participation mechanisms, which lead to tighter duration management and greater focus on cash flow matching. In contrast, non-life business typically has shorter-dated liabilities, allowing for greater tolerance of asset-liability mismatches and a more top-down SAA approach. While governance, metrics, and group-level frameworks are broadly consistent across segments, differences emerge in modelling approaches, risk limits, and portfolio objectives, with liability characteristics being the primary driver of ALM distinctions.

The diversity of ALM targets observed across firms illustrates that there is no single optimal approach. Rather, target frameworks are tailored to each firm's specific strategic priorities, risk profile, and stakeholder objectives, combining regulatory, economic, and management perspectives into a coherent steering framework.

Business segments covered

Survey question 3.3: Which segments does your company cover?
If your organisation covers both Life and non-life business, please indicate whether the ALM targets and metrics mentioned in the previous questions differ between the segments.
Single Choice with conditional free text.



CASE STUDY 1
2022 curve inversion

The long-end inversion of the swap curve in 2022 was mainly driven by strong demand from pension funds and insurers to hedge long-duration liabilities, which pushed long-term rates down, while there were few counterparties willing to take the opposite side. Macro expectations of aggressive short-term rate hikes followed by slower growth or recession reinforced the effect.

The curve inversion peaked in September 2022, and insurers were concerned about the impact of a potential normalisation of the interest rate curve, possibly driven by Dutch pension funds reducing long-duration exposures in light of upcoming pension reforms.

The concern was that long-duration assets held for matching purposes would decline in value upon curve normalisation, while liability valuations under the Solvency II framework would not adjust correspondingly, due to the extrapolation applied to the discount curve beyond the 20-year tenor.

Most Dutch insurers ultimately chose to give up part of their matching objective at the long end of the curve and shortened assets in a duration-neutral way. By doing so, they partially abandoned strict matching, but protected their solvency position by deliberately accepting a mismatch between asset and liability sensitivities at the long end of the yield curve.

CASE STUDY 2
Economic own funds protected, solvency ratio deteriorates

A European life insurer has closely matched the interest-rate sensitivity of its assets and liabilities to protect Economic Own Funds (EOF). As a result, when long-term interest rates fall sharply, the increase in asset values largely offsets the increase in liability values, leaving EOF broadly unchanged.

However, the same interest-rate movement increases the insurer's Solvency Capital Requirement (SCR) due to the insurer's long-dated guarantees and interest-rate risk exposure. Although Own Funds remain stable, the higher SCR causes the Solvency II ratio to decline.

ALM is often not about optimising a single metric. Effective balance-sheet steering requires managing trade-offs between regulatory solvency, economic value creation, liquidity, and profitability. The conflict between protecting Own Funds and protecting the solvency ratio is one of the clearest examples of this multi-objective nature of insurance ALM.

3. How insurance companies balance diverging objectives

The survey highlights that one of the central challenges in ALM is balancing multiple, and often conflicting, objectives. ALM is inherently a multi-objective decision-making framework rather than an exercise in optimising a single metric. As insurers seek to simultaneously protect economic value, solvency, liquidity, accounting outcomes, and investment returns, trade-offs are unavoidable. Several recurring tensions emerge across respondents:

Eligible own funds protection vs. solvency ratio protection

Actions that protect Eligible Own Funds do not always improve the Solvency II ratio. For example, reducing interest rate risk may stabilise economic value while increasing capital requirements or reducing diversification benefits, leading to a weaker solvency position. Consequently, hedging decisions may differ depending on whether the objective is to protect economic value, Eligible Own Funds or the Solvency II ratio, as hedge effectiveness can vary across these measures; further illustrated by case studies 1 and 2.

Market-consistent balance-sheet valuation vs. Solvency II valuation

Insurers manage risks on both a market-consistent and a regulatory basis. However, differences in valuation methodologies, discount curves, long-term guarantee measures, and capital calculations can lead to different conclusions about the attractiveness of a hedging or investment strategy. In particular, decisions to hedge risk margin sensitivity may lead to different conclusions under market-consistent and regulatory valuation frameworks, since the risk margin is a regulatory construct that does not have a direct economic equivalent. Further illustrated by case studies 2 and 4.

Market constraints vs. optimal hedging

The theoretically optimal hedge may be impractical due to limited market depth, transaction costs, collateral requirements, availability of long-dated instruments, counterparty constraints or the complexity of hedging nonlinear and potentially tail-dependent exposures. ALM strategies therefore need to balance effectiveness with market feasibility.

ALM hedging vs. liquidity risk

Derivatives can improve the alignment between assets and liabilities but often introduce collateral and liquidity requirements. As a result, reducing market risk may increase liquidity risk, particularly during periods of market stress. Further illustrated by case study 3.

Solvency II vs. accounting frameworks

Strategies that improve solvency metrics can create accounting volatility under frameworks such as IFRS, while actions that reduce earnings volatility may not be optimal from a regulatory capital perspective. Insurers therefore need to balance regulatory and financial reporting objectives simultaneously. Further illustrated by case study 3.

These tensions illustrate that ALM decisions cannot be assessed from a single measurement perspective. Effective ALM requires balancing competing objectives while recognising that improvements in one dimension may come at the expense of another.

4. How insurance companies measure ALM (ALM metrics)

A key ALM challenge is assessing whether management actions and hedging strategies achieve their intended objectives. The survey shows that insurers rely on a broad set of complementary metrics for this purpose.



At one end of the spectrum are sensitivity-based measures derived from comprehensive ALM and Solvency II models. Examples include parallel and non-parallel interest rate shocks, credit spread sensitivities, equity stress scenarios and integrated stress tests that capture the simultaneous impact on assets, liabilities, Own Funds and capital requirements.

These metrics are often regarded as the gold standard for assessing ALM risk because they capture the combined effects of market movements across the entire balance sheet, including interactions between assets, liabilities, capital requirements, diversification effects, management actions and non-linear exposures. Rather than measuring individual risk factors in isolation, they provide a holistic view of the insurer's financial position under changing market conditions.

This comprehensive view comes at the cost of greater complexity. The results are inherently model-dependent, sensitive to assumptions and calibration choices and may be difficult to interpret and communicate outside specialist risk and actuarial functions.

Consequently, while they provide the most complete assessment of ALM risk, their complexity can limit their effectiveness as management and board-level steering metrics.

At the other end of the spectrum are simpler indicators such as duration gap, DV01, convexity and liquidity ratios. These metrics are intuitive, transparent and easy to communicate, making them useful tools for management and board oversight. However, they capture only individual aspects of ALM risk. For example, duration gap measures the mismatch in interest rate sensitivity between assets and liabilities, while DV01 quantifies the balance sheet impact of a small interest rate movement.

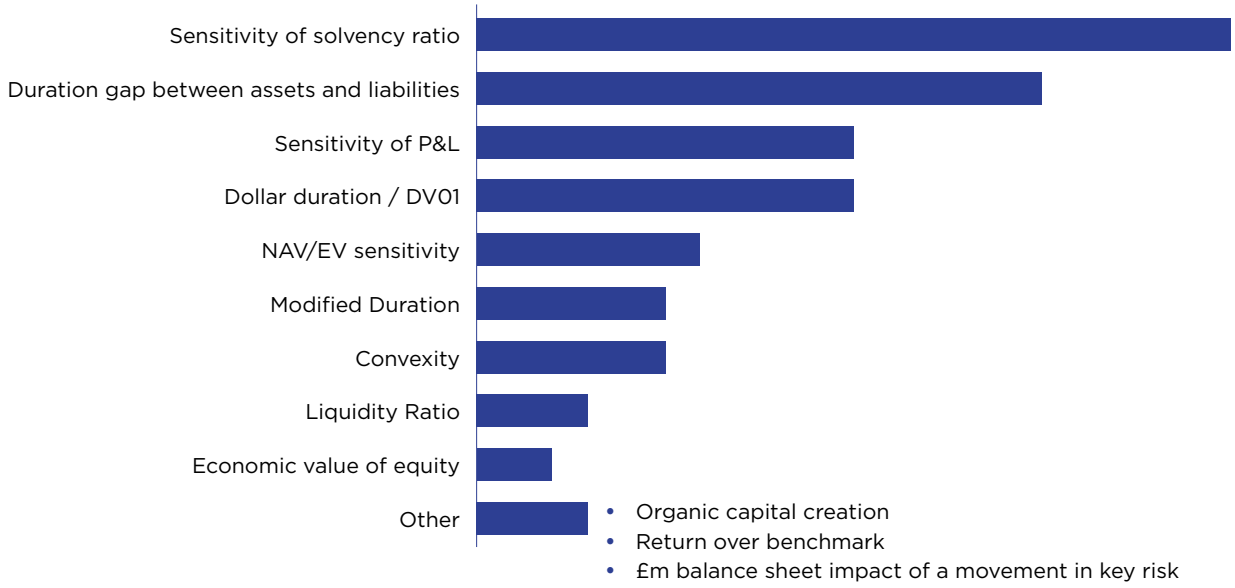
In practice, insurers combine multiple metrics, with solvency ratio sensitivities and duration gap emerging as the most widely used measures. The continued prominence of duration gap reflects the near-universal importance of asset–liability duration matching as a first-order indicator of interest rate risk. Many firms complement duration-based measures with DV01 and convexity to quantify the monetary impact of interest rate movements and to better capture non-linear exposures.

Despite its widespread use, duration gap has important limitations. First, it does not measure monetary differences in asset and liability exposure. Further, it captures only first-order interest rate sensitivity and therefore ignores non-linear exposures arising from embedded options, differences in convexity, basis risk between discount curves and hedge instruments and other market risks such as credit spreads, inflation, equity and liquidity. Consequently, a well-matched duration gap does not necessarily imply that the balance sheet is protected against large market shocks or adverse movements in economic value and solvency.

Liquidity, while universally recognised as a critical component of financial resilience, is generally

Evaluating ALM steering & hedging strategies

Survey question 3.4: What metrics do you use to assess the effectiveness of your ALM steering and hedging strategy? Multiple Choice.



managed as a constraint rather than a performance metric. Insurers typically define minimum liquidity requirements under both normal and stressed conditions, often complemented by targets for highly liquid assets, minimum Liquidity Coverage Ratios (LCR), collateral buffers and limits on short-term funding reliance. In contrast, explicit maximum liquidity limits are rare, despite the opportunity cost associated with holding excess liquidity and the potential impact on investment returns. As a result, liquidity management is primarily focused on ensuring adequate resilience and meeting obligations under stress, rather than optimising the balance between liquidity and yield. As highlighted later in this paper, the increasing allocation to illiquid assets and heightened regulatory expectations have further elevated liquidity from a secondary ALM consideration to a central constraint in balance-sheet management.

No single metric fully captures ALM performance. Solvency sensitivities provide a regulatory perspective, duration-based measures assess structural matching, while economic value, liquidity and P&L metrics provide complementary views of value preservation and financial performance. Consequently, insurers assess ALM effectiveness through a combination of regulatory, economic, accounting and risk-based metrics. This multi-metric approach addresses the limitations of individual measures and reflects the fundamentally multi-objective nature of insurance ALM.

CASE STUDY 3
Interest rate hedge

A life insurer may use interest rate swaps to reduce the duration gap between assets and liabilities. This may improve asset–liability matching and may reduce the sensitivity of the Solvency II ratio to interest rate movements.

However, the same hedge may increase IFRS earnings or OCI volatility because assets, liabilities, and derivatives are not always measured equivalently under IFRS 17 and IFRS 9. In addition, adverse market movements can trigger collateral calls on the swaps, creating short-term liquidity needs.

This example illustrates a recurring ALM trade-off: strategies that reduce regulatory risk may simultaneously increase accounting volatility and liquidity risk. Effective ALM therefore requires balancing regulatory, accounting, and liquidity objectives rather than optimising a single metric.



Key takeaways

Survey responses confirm that insurance ALM is inherently a multi-objective discipline. While protecting solvency has become a primary objective for many firms, insurers continue to balance economic value preservation, liquidity resilience, profitability and accounting outcomes. No single metric is sufficient to capture these different perspectives. Instead, effective ALM relies on a combination of complementary measures, supported by robust governance and informed management judgement. The ability to understand and manage trade-offs between competing objectives ultimately distinguishes mature ALM frameworks from purely metric-driven approaches.



Figure 3.5: Main ALM Metrics

Metric	Purpose	Advantages	Limitations
Modified Duration	Measures the sensitivity of asset or liability values to interest rate changes.	Simple, intuitive, easy to calculate.	Assumes small parallel rate shifts and ignores non-linear effects.
Duration Gap	Measures the mismatch between asset and liability durations.	Direct indicator of interest rate exposure and ALM alignment.	Oversimplifies complex cash-flow structures and ignores convexity.
Dollar Duration / DV01	Measures the monetary impact of a 1 basis point interest rate move.	Provides an intuitive risk measure in monetary terms.	Focuses only on small interest rate movements and does not show full yield curve shifts.
Convexity	Measures the curvature of the price-yield relationship.	Improves assessment of larger interest rate movements.	More complex to calculate and communicate.
Liquidity Ratio	Assesses the ability to meet obligations as they fall due.	Directly linked to policyholder payments and liquidity management.	Does not measure market or solvency risk.
Economic Value of Equity (EVE), Net Asset Value (NAV)	Measures the economic value difference between assets and liabilities.	Captures long-term economic risk and value creation.	Can be model-dependent and sensitive to assumptions.
NAV Sensitivity	Measures the impact of market movements on Net Asset Value.	Directly links market risk to economic capital.	May not fully reflect regulatory constraints.
Solvency Ratio Sensitivity	Measures the impact of risk factors on the Solvency II ratio.	Closely aligned with regulatory objectives and management reporting.	Can obscure underlying economic drivers and depends on model complexity.
P&L Sensitivity	Measures the effect of market changes on earnings.	Relevant for management, investors and accounting performance.	Typically focuses on shorter-term outcomes rather than long-term balance sheet effects.

Additional risk-specific measures, including FX, inflation and spread sensitivities, complement these core ALM metrics and are discussed in Chapter 4.

CASE STUDY 4

Regulatory versus economic FX risk management

A multinational insurer reports its solvency position in euros and has significant business operations in the United States. Under Solvency II, foreign exchange (FX) risk is measured relative to the reporting currency, meaning the capital requirement reflects the mismatch between USD-denominated assets, liabilities, and cash flows when translated into euros.

From a regulatory perspective, holding additional USD assets may increase the measured FX mismatch and therefore the Solvency II FX risk charge. However, management takes a broader economic view. Because a significant portion of the firm's Solvency Capital Requirement (SCR) is generated in the US business, the insurer deliberately holds part of its capital in USD. This helps absorb potential losses in the US operation and supports a stable local and group solvency ratio.

As a result, the firm's strategic objective is not necessarily to eliminate all FX mismatches versus the Euro, but to maintain a target level of USD capital. To monitor this, the insurer uses an additional ALM metric that measures the difference between its actual and target USD position.

This complementary measure provides insight into whether the firm's currency exposures remain aligned with its capital management strategy, even when the regulatory Solvency II FX metric suggests a higher FX risk. Together, the two metrics offer a more complete view of FX risk by reflecting both Solvency II sensitivities and the firm's broader capital management objectives.

4. Key Market Risk Drivers and Management Approaches

1. Introduction

The survey confirms that the core ALM risk factors include interest rate and foreign exchange risk, with varying treatment of inflation, credit spread and liquidity depending on the business model. For each risk factor, firms apply a combination of asset-side instruments, liability-side mechanisms and strategic allocation decisions, depending on the nature of the risk and the underlying liability profile.

This chapter examines the principal ALM risk drivers and the strategies available to manage or mitigate them. The key risk drivers and the practical challenges associated with them are described below.

2. Interest rate risk

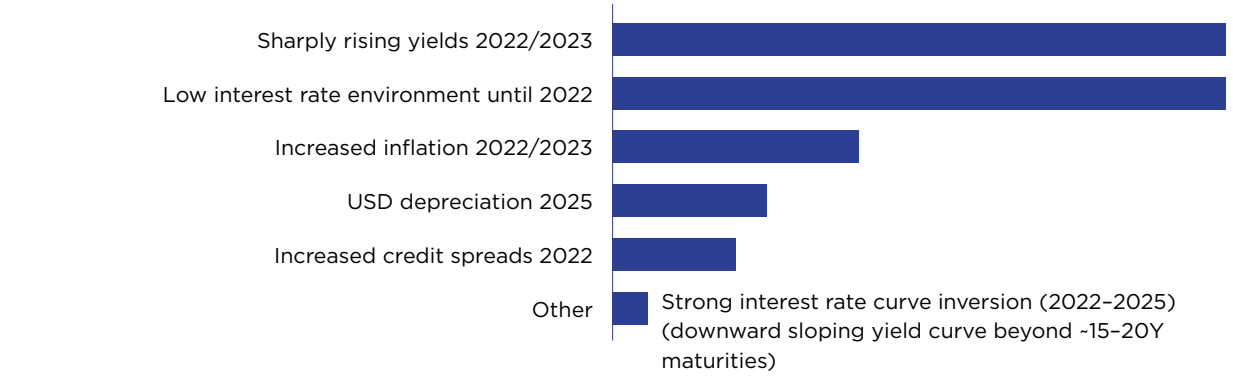
Why interest rate risk arises

Interest rate risk is one of the most important ALM challenges faced by insurance companies. The risk arises from mismatches between the sensitivity of assets and liabilities (after reinsurance) to changes in interest rates. Because insurance liabilities are often long dated and uncertain, insurers typically seek to align asset and liability sensitivities through the use of fixed-income securities, interest rate swaps, and other derivative instruments.

Most insurers do not regard interest rate risk as a compensated source of return and therefore seek to minimise exposure wherever practicable. As a result, interest rate management is a central component of ALM frameworks across the industry.

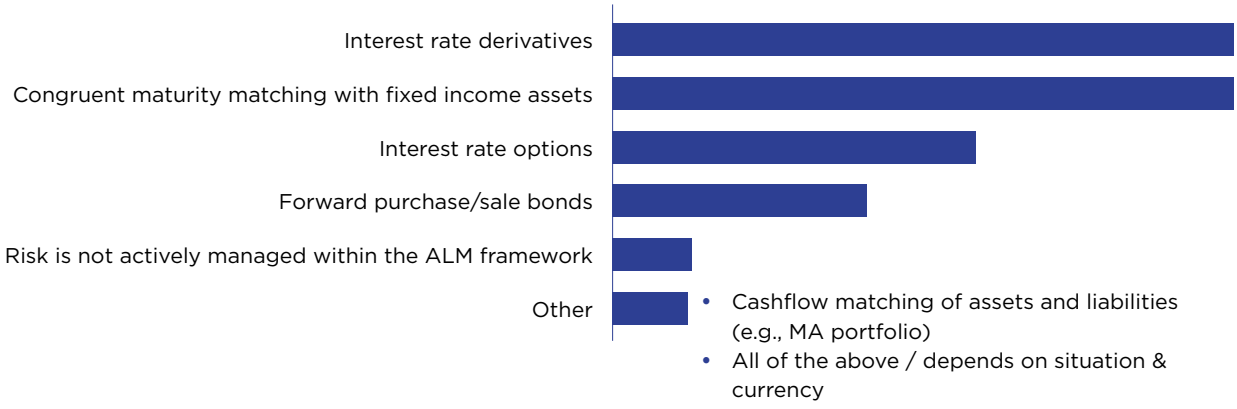
Most impactful recent market shifts on ALM

Survey question 4.1: Which of the following recently observed market shifts had a large impact on your ALM? Multiple Choice



Interest rate risk

Survey question 4.2: How do you manage interest rate risk? Multiple Choice with free text



Key challenges

Survey responses indicate that the primary challenge in managing interest rate risk is balancing exposures across multiple reporting frameworks, particularly Solvency II and IFRS. As discussed in Chapter 3 ("How insurance companies balance diverging objectives"), differences in valuation methodologies, yield curves and liability measurement can result in a hedge being effective under one framework while producing a different outcome under another.

Respondents also highlighted challenges associated with liability characteristics that cannot be hedged perfectly. Examples include embedded guarantees, long-dated cash flows extending beyond liquid market maturities and exposures in markets where suitable hedging instruments are limited. In these situations, insurers must decide whether to retain residual risk or accept the costs and basis risks associated with partial hedging strategies.

A similar preference for limiting modelling uncertainty was evident in discussions among CRO Forum members regarding the scope of interest rate sensitivity analyses. There was broad support for focusing on existing business, with future premiums from in-force policies generally considered relevant, while future new business was typically excluded. However, a small number of firms also incorporated elements of expected future business, reflecting their view that such projections were sufficiently embedded in planning and risk management processes to warrant consideration. Overall, the prevailing approach was to anchor analyses in more observable and reliable cash flows while avoiding the additional uncertainty and complexity introduced by future business projections.

Overall, survey responses suggest that firms accept that interest rate risk cannot be eliminated completely. Instead, the objective is typically to reduce exposures to a level consistent with risk appetite while balancing regulatory, accounting and operational considerations.

Quantifying interest rate risk

Interest rate risk is measured using a range of methodologies. Solvency II ratio sensitivities, own funds sensitivities and duration gap analysis are among the most widely used approaches, often supplemented by convexity measures and scenario-based analyses. As discussed in Chapter 3 ("How insurance companies measure ALM"), firms typically assess interest-rate exposure using a combination of solvency sensitivities, duration-based metrics and economic-value measures rather than relying on a single indicator.

While respondents generally use similar tools, significant differences were observed in implementation. In particular, firms vary in their treatment of the illiquid part of the yield curve beyond the Last Liquid Point, as well as in the scope of assets and liabilities included in their analyses. As mentioned, some firms focus exclusively on existing balance sheet positions, while others incorporate assumptions regarding future business or projected cash flows from assets without contractual maturities.

These differences have important practical implications. Measured interest rate sensitivities and capital impacts are influenced not only by underlying economic exposures but also by modelling choices, assumptions and the scope of analysis. As a result, firms with broadly similar balance sheets may report materially different interest rate exposures, making direct comparisons difficult.

Differences in hedging strategies often reflect these measurement choices. Firms that place greater emphasis on regulatory stress measures may adopt different hedge structures than those focusing primarily on economic or accounting sensitivities. Consequently, interest rate risk management remains closely linked to each firm's objectives, reporting priorities and risk appetite.

The potential trade-offs between regulatory risk reduction, accounting volatility and liquidity requirements are illustrated by the Interest Rate Hedge case study in Chapter 3.

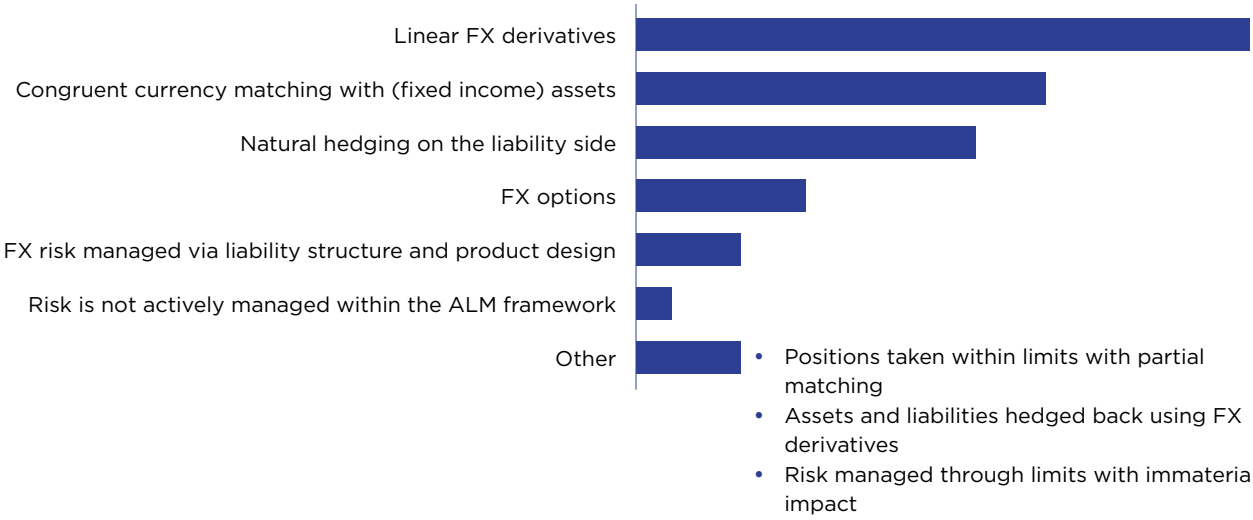
3. Foreign Exchange rate

Foreign exchange (FX) risk arises when assets, liabilities and capital are denominated in different currencies. For internationally active insurers, FX risk is therefore not only an investment risk but also a key ALM consideration.

The primary objective of FX hedging is to reduce the economic impact of this mismatch, rather than to hedge Own Funds directly. The focus is therefore on the residual currency exposure after considering liabilities in the same currency and existing hedging instruments. By limiting this residual exposure, the hedging strategy reduces volatility in the economic balance sheet and, as a consequence, helps protect Own Funds and the overall solvency position.
The appropriate hedge level should balance risk reduction against hedging costs, liquidity needs and operational constraints.

FX risk

Survey question 4.3: How do you manage FX risk? Multiple Choice with free text



The survey confirms that FX risk is generally managed actively within the ALM framework. The most commonly reported approach is the use of linear FX derivatives, followed by congruent currency matching through fixed-income assets and natural hedging on the liability side. FX options are used less frequently, while only a marginal share of respondents indicated that FX risk is not actively managed. This suggests that insurers tend to rely primarily on relatively simple and liquid hedging solutions, complemented by balance-sheet matching where the liability structure allows it. Responses classified as 'other' mainly refer to controls through investment policy limits.

ALM implications and key trade-offs

From an ALM perspective, the key question is not simply how much is invested in foreign currencies, but how much exposure remains after natural matching and financial hedging. The mismatch can be monitored through a small set of simple metrics:

Measurement basis matters

To ensure that FX metrics provide a meaningful representation of economic exposure, the measurement basis applied to assets, liabilities and derivatives is equally important. Cash instruments should be measured on an economic-value basis (market value for assets and economic value for liabilities), while derivatives should be captured through their underlying FX exposure rather than their fair value. For example, an FX forward may have a market value close to zero at inception while hedging €90 million of currency exposure; using fair value alone would therefore miss the hedge. For linear FX derivatives, the relevant measure is generally the signed currency notional converted into the reporting currency; FX options should instead be delta-adjusted, while cross-currency swaps should reflect the exposure of the relevant currency legs.

Figure 4.4: Selected FX metrics, risk-specific extension of figure 3.5

Metric	What it shows	Simple calculation
Gross FX exposure	Size of foreign-currency investments before matching or hedging	MV of FX assets / Total MV of assets
Currency gap	Unmatched position before derivatives	MV of FX assets – EV of FX liabilities
Hedge ratio	Share of the unmatched position covered by derivatives	FX derivative exposure / Currency gap
Residual FX mismatch	FX risk remaining after natural and financial hedging	Currency gap – FX derivative exposure
Residual mismatch ratio	Materiality of the open FX position for the balance sheet	Residual mismatch / Total MV of assets

Among these measures, the residual FX mismatch is usually the most relevant ALM metric, as it captures the economic exposure remaining after both natural and financial hedging.

Key trade-offs in FX risk management

While reducing FX risk can improve balance-sheet stability, it is not costless and may involve several trade-offs, including:

- **Hedging costs:** forward-point carry, bid-ask spreads, transaction expenses and recurring rollover costs, which may erode the return of the hedged position.
- **Liquidity risk:** the need to hold sufficient cash or liquid assets to settle, renew or collateralise hedges, particularly under stress.
- **Margin calls:** adverse mark-to-market moves on collateralised derivatives can trigger temporary collateral outflows even when the hedge remains economically effective.
- **Limited market depth** and tenor availability for longer-dated instruments can widen spreads and force the use of shorter hedges, creating maturity mismatch, rollover and repricing risk.

The ALM assessment should therefore consider both the residual FX exposure and the economic and implementation risks of the hedging programme.

This evidence is particularly relevant when setting the hedge ratio and hedge maturity. A higher hedge ratio reduces the sensitivity of the economic balance sheet to currency movements but can increase recurring costs and liquidity needs. Short-dated FX forwards require frequent rollovers and expose the insurer to changes in forward points, while longer-dated instruments reduce rollover frequency but may be less liquid and more costly.

FX risk should also be considered jointly with interest-rate, spread and equity risk in integrated stress scenarios, particularly where correlations may become less stable under stressed market conditions.

Operational ALM monitoring should combine residual mismatch and hedge-ratio metrics with liquidity and collateral requirements and the P&L impact of FX stresses.

The hedging strategy should therefore balance three objectives: limiting FX volatility, maintaining adequate liquidity under stressed conditions, and controlling the economic cost of the hedge. A 100% hedge is not necessarily optimal where the residual exposure is small or hedging costs are material; the target hedge ratio should instead be consistent with the liability profile, investment strategy and the company's Risk Appetite Framework.

CASE STUDY

FX hedging of long-term liabilities in the Turkish market

The Turkish market provides an example of how persistent inflation, currency depreciation and rapidly changing interest-rate conditions can affect both sides of an insurer's balance sheet simultaneously. In such an environment, policyholders may seek protection against inflation and currency depreciation by purchasing savings products denominated in or linked to foreign currencies, most commonly USD. As a result, insurers can accumulate liabilities whose economic value is driven by a foreign currency rather than by the local reporting currency.

From an ALM perspective, the relevant exposure is therefore the currency in which policyholder benefits are ultimately determined. If liabilities are denominated in or contractually linked to, USD, the natural hedge is not the local currency but USD-denominated assets with a matching duration profile.

In practice, however, sufficiently long-dated USD assets or derivatives may not always be available. Insurers may therefore rely on shorter-dated FX forwards or swaps to hedge long-term liabilities. While this can result in a hedge ratio close to 100%, it introduces a maturity mismatch between the liability and the hedge. The economic exposure may appear hedged today, but the hedge must be rolled repeatedly over the lifetime of the liability, creating rollover risk, liquidity requirements and uncertainty regarding future hedging costs.

The key ALM lesson is that a high hedge ratio alone does not necessarily imply effective long-term currency matching. Both the notional mismatch and the maturity mismatch between liabilities and hedging instruments need to be considered when assessing the effectiveness of an FX risk management strategy.

The key takeaways from FX risk can be summarised as follows:

- FX risk should be assessed on a net ALM basis: the key measure is the residual mismatch after liabilities and hedging, rather than gross foreign-currency assets alone.
- FX hedging reduces economic balance-sheet volatility and, as a consequence, helps protect Own Funds and the solvency position.
- A high gross FX exposure does not necessarily imply high residual risk when natural matching or financial hedging is effective.
- The optimal hedge ratio is not necessarily 100%: risk reduction must be balanced against hedging costs, liquidity and collateral needs, and rollover or maturity mismatch.

From an ALM perspective, the key question is therefore not how much foreign-currency exposure an insurer holds, but how much residual currency risk remains after natural matching and hedging, and at what economic cost that protection is achieved.

4. Inflation

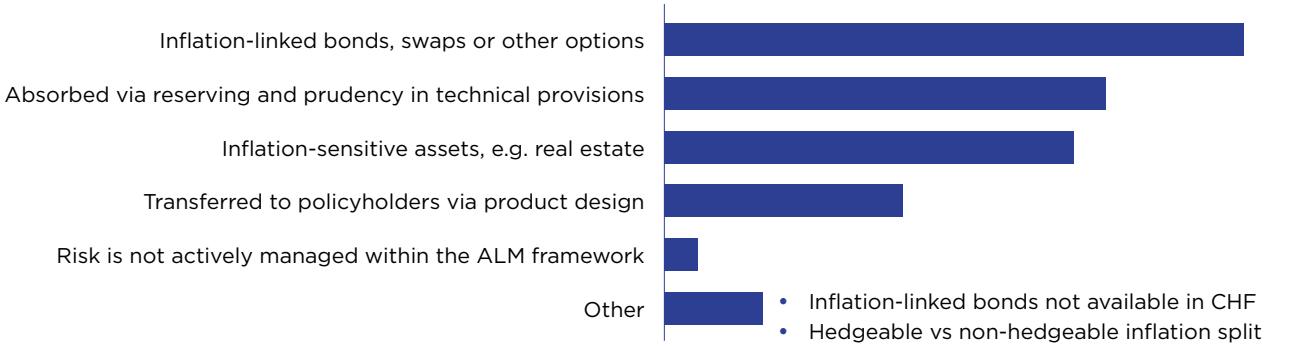
Inflation refers to a sustained increase in the general price level of goods and services. The CRO Forum recently published a study 'Unmasking inflation'[2], which analysed and described how to identify, measure and manage the inflation risk. The key takeaways from this study are:

- Inflation remains the key risk for the insurance industry despite the recent moderation. Most CROs ranked inflation among their top 10 risks.
- The inflation impact differs significantly between non-life and life. Inflation mainly impacts claims costs in non-life, particularly in motor, property and long-tail liability business. Increased inflation often uplifts interest rates, which might increase the lapse risk in Life Business. Inflation has many second-order effects, including lower new business volumes, negative asset valuation and elevated liquidity risk.
- Inflation can have important impact on the Solvency position. Such impact can be reduced by asset-liability matching. The matching of assets and liabilities cannot fully eliminate the inflation risk due to the basis risk. The ALM should be regularly reviewed in order to keep the mismatch within the risk appetite.
- Overall, the insurance industry successfully navigated the recent inflation shock, but future resilience will depend on inflation modelling, proactive stress testing, disciplined ALM, and swift management responses to inflation-related risks.

Insurers are typically exposed to rising inflation and therefore use instruments or balance-sheet measures whose value or cash flows increase with inflation. The survey showed that inflation linked bonds, swaps and options are employed to hedge the inflation risk. An alternative strategy is to absorb the inflation risk via reserving and prudency in technical provisions or acquisition of other inflation sensitive assets (e.g. real estate).

Inflation risk

Survey question 4.5: How do you manage inflation risk? Multiple Choice with free text



- Inflation-linked bonds not available in CHF
- Hedgeable vs non-hedgeable inflation split (hedge in ALM vs treat in reserving)
- Cashflow matching of inflation-linked assets and liabilities (e.g. Matching Adjustment portfolios)
- Inflation sensitivity managed within defined ranges

[2] https://thecroforum.org/wp-content/uploads/2024/05/CRO-Forum-Inflation-Risk-paper-1.pdf

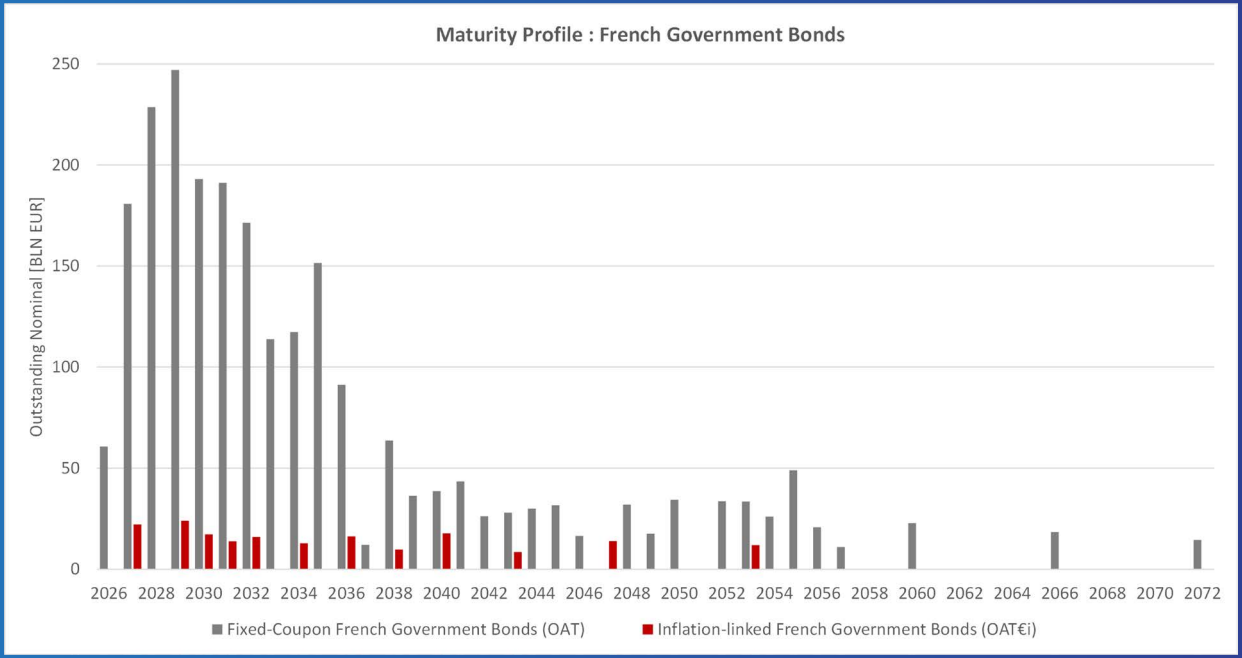
CASE STUDY

Availability and suitability of inflation-linked bonds

Public inflation-linked bond markets provide insurers with valuable instruments to hedge inflation risk. However, the availability of securities alone does not guarantee an effective hedge. The suitability of available instruments depends on several factors, including the inflation index referenced, the maturity profile of the bonds and the outstanding market capacity relative to the insurer's liabilities.

France represents one of the most developed inflation-linked bond markets in Europe.

As illustrated below, the French Treasury currently maintains a broad range of inflation-linked sovereign bonds linked either to French inflation or Euro area inflation. Nevertheless, even in this comparatively deep market, the available instruments may not fully align with insurers' liability exposures, creating basis risk and maturity mismatches. France continues to issue inflation-linked debt, whereas some sovereign issuers, such as Germany, have discontinued further issuance, reducing investment opportunities and market depth in other jurisdictions.



(*) source: Agence France Trésor (www.aft.gouv.fr/en/encours-detaille-oat and www.aft.gouv.fr/en/encours-detaille-oatei)

5. Credit spread

Credit spread risk arises from changes in the spread between risky assets and the risk-free yield curve. Insurance companies are naturally exposed to this risk because fixed-income securities typically represent the largest share of their investment portfolios and are used to back long-term liabilities.

A widening of credit spreads generally leads to a decline in the market value of bond portfolios and may result in lower own funds, increased capital requirements and deterioration of solvency metrics. While insurers typically invest with a long-term horizon, market-consistent valuation frameworks such as Solvency II have increased the sensitivity of balance sheets and solvency ratios to short-term spread movements.

Over the last decade, the management of credit spread risk has become increasingly important. The prolonged low-interest rate environment encouraged insurers to increase their exposure to higher-yielding assets, including corporate bonds, private debt and infrastructure investments. At the same time, Solvency II introduced explicit capital requirements for spread risk, while IFRS 17 and IFRS 9 added new considerations related to accounting volatility and earnings stability.

Key challenges

The management of credit spread risk requires balancing several competing objectives. Insurers seek to enhance investment returns while maintaining acceptable levels of capital consumption, solvency volatility and accounting stability. This trade-off has become more complex due to differences between regulatory and accounting frameworks.

Additional challenges arise from investments in illiquid assets, where spread sensitivities may be more difficult to assess and market prices may not always be readily observable. Although derivative instruments such as Credit Default Swaps (CDS) can be used to hedge spread exposures, these strategies may introduce basis risk, liquidity considerations and operational complexity.

As a result, insurers often combine asset allocation decisions, diversification and risk appetite limits to manage credit spread exposures while maintaining an appropriate balance between profitability and risk.

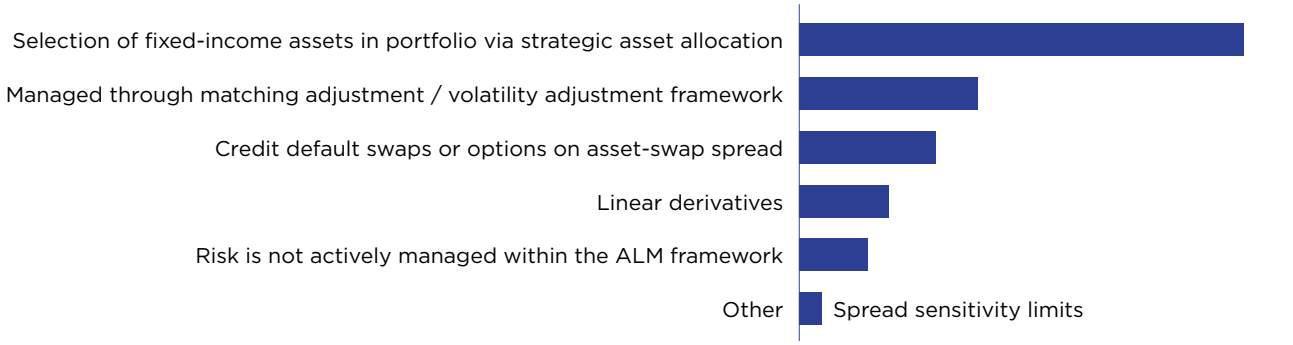
Survey results

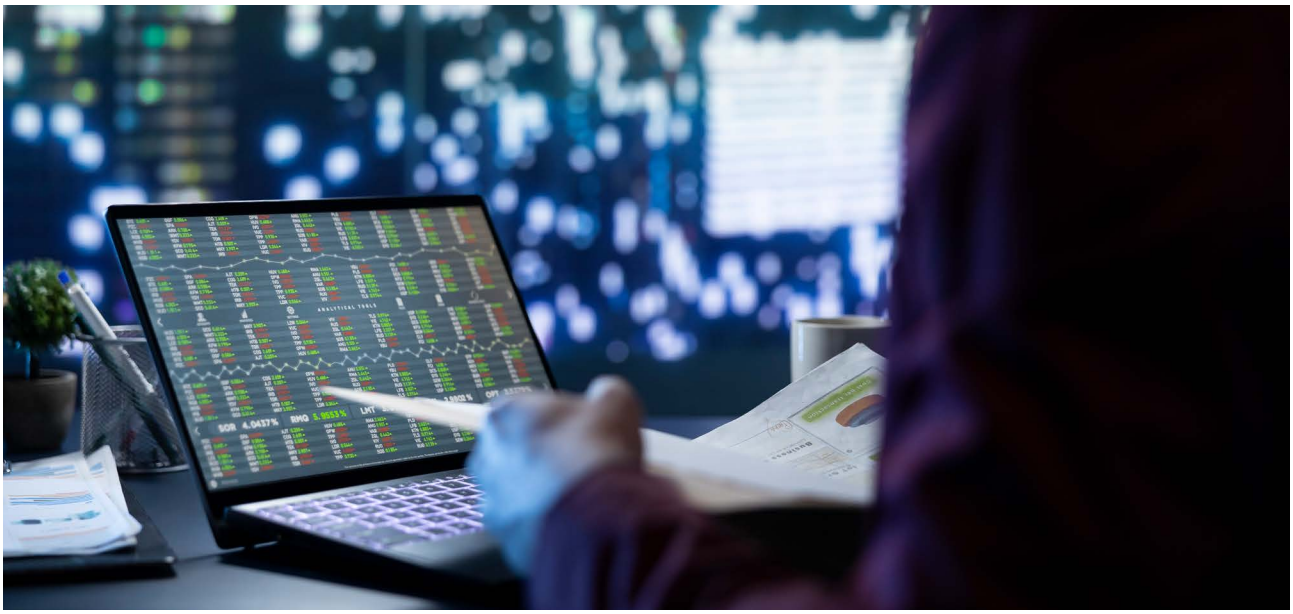
The survey results indicate that the majority of respondents manage credit spread risk primarily through strategic asset allocation, with the selection of fixed-income assets being the most used approach. This suggests that insurers generally address spread risk through portfolio construction and investment decisions rather than through dedicated hedging programmes.

The use of active hedging techniques, such as credit derivatives or options on asset swap spreads, appears to be relatively limited. Some respondents also reported managing spread risk through Matching Adjustment or Volatility Adjustment frameworks where applicable.

Credit spread risk

Survey question 4.6: How do you manage credit spread risk? Multiple Choice with free text





5. ALM in the Broader Risk and Finance Framework

1. Introduction

Modern ALM increasingly extends beyond traditional market risk management. Liquidity constraints, regulatory developments, sustainability considerations and technological advances all influence balance-sheet decisions and can materially affect solvency, profitability, liquidity and accounting outcomes. As a result, effective ALM requires an integrated framework that connects risk, finance and investment perspectives rather than managing these dimensions in isolation.

2. Liquidity risk management

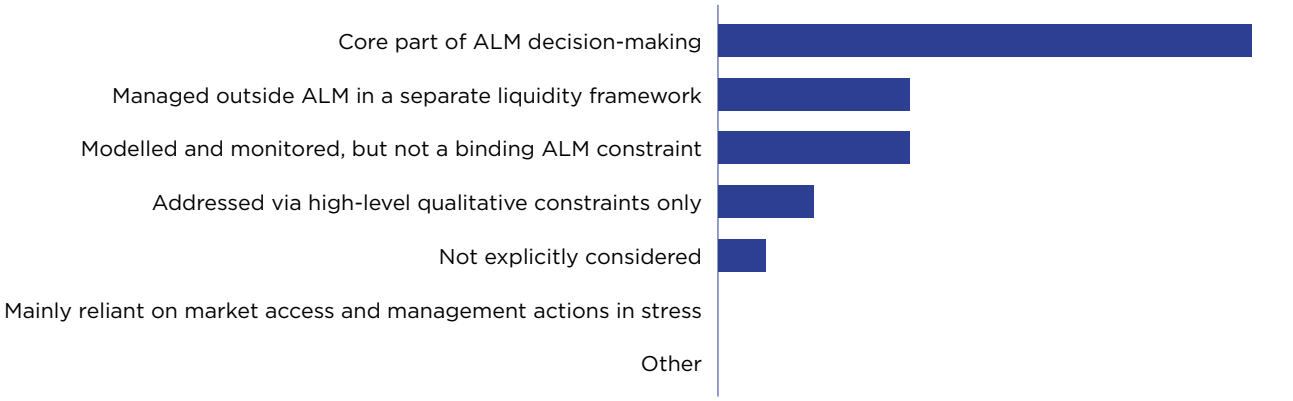
Liquidity risk provides one of the clearest examples of the trade-offs described in Chapter 3. Strategies aimed at enhancing returns through illiquid assets may improve profitability and economic value, while simultaneously reducing balance-sheet flexibility and increasing vulnerability to liquidity stress. Liquidity risk is the risk that an insurer is unable to meet its obligations as they fall due without incurring unacceptable losses.

While insurers generally benefit from predictable liability cash flows and the ability to hold assets to maturity, the increasing allocation to illiquid assets, the experience of market stress events such as COVID-19 and evolving regulatory expectations have elevated liquidity management as a key component of ALM. These expectations are further reinforced by the Solvency II Review, which strengthens liquidity risk management requirements, including the introduction of Liquidity Risk Management Plans and company-specific liquidity metrics (see the section on the Solvency II Review).

For most insurers, liquidity is firmly within the ALM remit, although the industry has not converged on a single operating model. Approaches range from frameworks in which liquidity is treated as a binding ALM constraint, with the strategic asset allocation determined subject to explicit liquidity metrics and buffer requirements, to parallel governance models where liquidity is monitored alongside ALM considerations but does not directly influence strategic asset allocation decisions.

Integration of liquidity risk within the ALM framework

Survey question 5.1: How is liquidity risk integrated into your ALM framework?





Illiquid assets and their impact on ALM

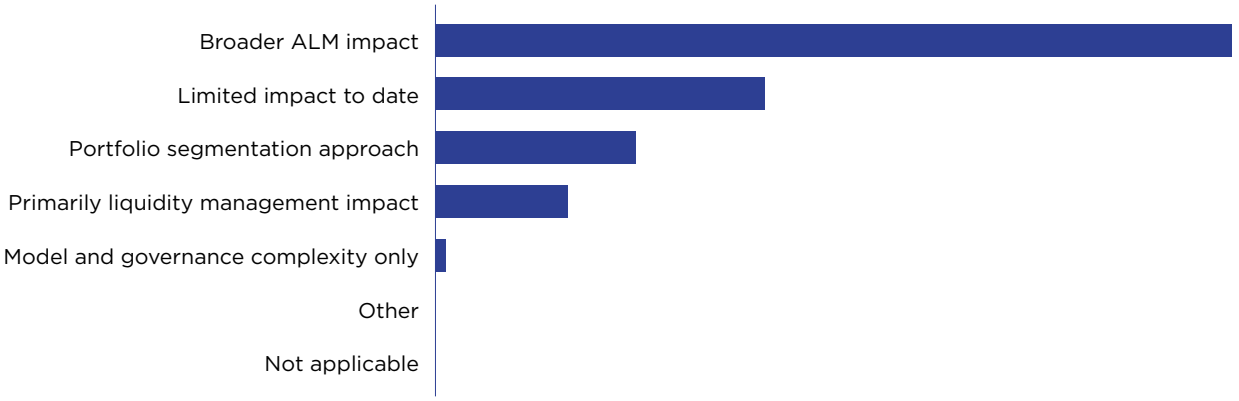
Allocations to private credit, infrastructure, real estate and private equity have grown materially in recent years. For most insurers, these asset classes now play a significant role in ALM, influencing strategic asset allocation decisions, liability matching strategies and capital management.

As a result, the management of illiquid assets has become an increasingly important consideration in balancing investment return objectives with liquidity, risk and regulatory requirements.

This growth is visible across the wider European market, though the aggregate picture is more nuanced than the direction of travel alone suggests. European Insurance and Occupational Pensions Authority (EIOPA) Financial Stability Report[3] of June 2026 classifies EEA insurers' investments by liquidity and finds that illiquid and non-marketable assets accounted for approximately 24% of total investments at year-end 2025.

Impact of illiquid assets on the ALM framework

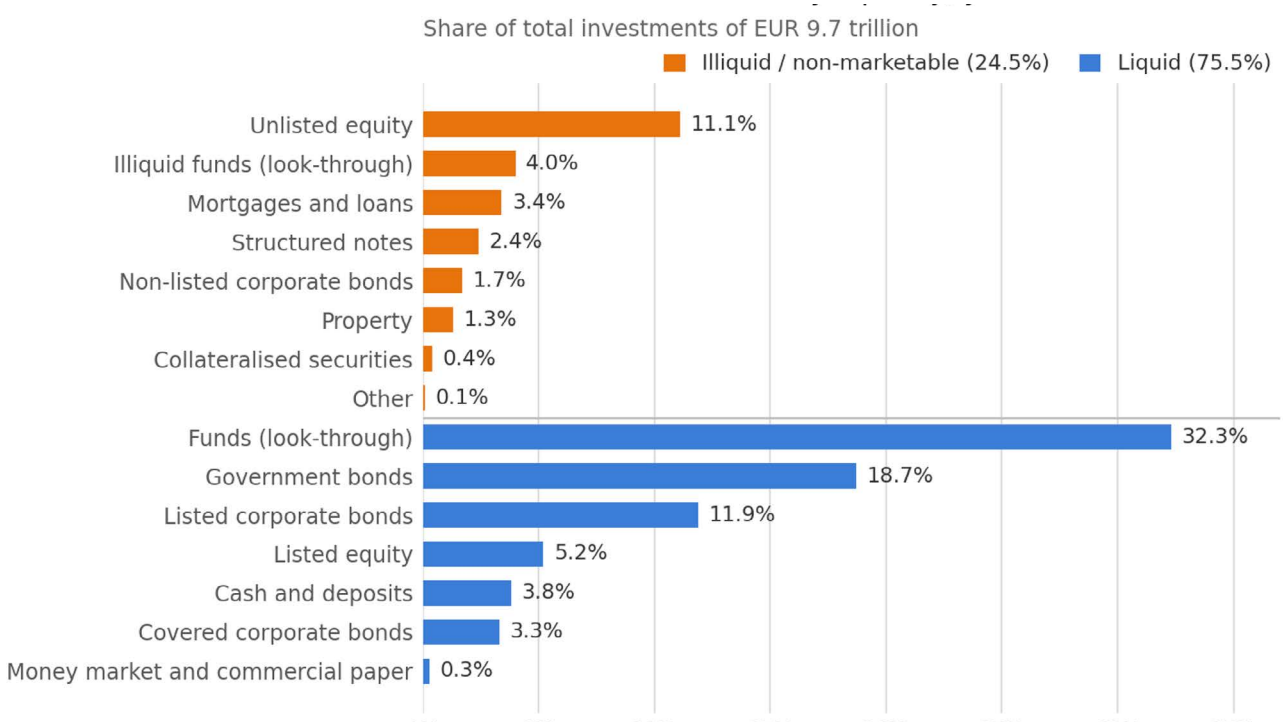
Survey question 5.2: How does the use of illiquid assets (e.g. private credit, private equity, infrastructure) impact your ALM framework in practice?





[3] Source: https://www.eiopa.europa.eu/publications/financial-stability-report-june-2026_en

Figure 5.3:
EEA insurers' investment by liquidity[3]



Source: EIOPA Financial Stability Report, June 2026, Figure 5.58 (Quarterly Reporting Solo, Q4 2025).
All insurers, look-through applied to funds.

Behind the sector aggregate, the picture differs markedly by business model and the differences are instructive for ALM. Life insurers hold 30.4% of their general account investments in illiquid form, mainly concentrated in mortgages and loans, unlisted equity and illiquid funds. This is the profile one would expect where long-dated, predictable liabilities permit a genuine illiquidity budget. For non-life insurers the publication shows a similar number of 32.7%, but for a different reason: their shorter and more uncertain claims profile makes the composition matter more and their illiquid holdings are dominated by unlisted equity rather than by cash-flow-generating assets. For reinsurers, the EIOPA study shows a very high share of illiquid assets of 60.3% - this number should be interpreted with caution, as it is materially influenced by holdings in related undertakings, rather than illiquidity in the ALM sense. On the other side, composite insurers show the lowest share of illiquid assets with 20.5%.

The comparison makes the wider point that a headline illiquidity ratio is a weak summary statistic on its own. Portfolio liquidity depends not only on the share of illiquid assets but on the quality and convertibility of the remaining liquid portion and two insurers with similar illiquid shares may have very different capacity to raise cash under stress.

For ALM purposes the relevant question is not how much of the portfolio is illiquid, but whether the liquid remainder can be mobilised in the size and the timeframe the liabilities may demand.

Insurers are drawn to these assets primarily by the illiquidity premium. In a prolonged low-interest-rate environment the search for yield pushed life insurers in particular towards higher-yielding, less liquid holdings, and the additional return over comparable liquid instruments remains the main motivation. Better diversification, a closer match for long-dated liabilities and, increasingly, sustainability considerations are secondary drivers.

At the same time, illiquid assets raise the bar for ALM. Because many alternatives lack fixed coupons or maturities, they complicate classic duration matching, especially for life insurers, and in practice insurers rarely model the duration of these non-fixed-income assets at all, which leaves them largely outside the classic matching framework. They also give rise to recurring modelling challenges, including embedded options and prepayment or extension risk, look-through for fund structures, reliance on external pricing and limited historical data, and they set a higher bar for valuation and governance.

An important distinction, however, is between illiquid asset classes that generate contractual cash flows and those that do not. Where insurers apply look-through to private debt holdings, the underlying cash flows can be brought into the matching framework and contribute to duration and cash-flow matching in the same way as public fixed income. Real estate, infrastructure equity and private equity, by contrast, are typically excluded from matching altogether. The practical constraint is therefore less the illiquidity of these assets than the absence of contractual cash flows and the transparency required to model them.

Reflecting this, the maximum allocation to illiquid assets is in practice governed primarily by risk appetite and the strategic asset allocation, rather than by duration or solvency matching or by the projected liquidity requirements of the business. As a result, limits on illiquid asset exposure are typically established as part of the insurer's overall risk appetite framework, with the focus on balancing return objectives against liquidity and balance sheet resilience, rather than on asset-liability matching considerations alone.

Among illiquid asset classes, private debt has emerged as the primary growth area. Industry surveys through 2026 indicate that insurers continue to increase allocations to private debt while reducing exposure to real estate, leading to a narrowing gap between the two asset classes. Under a broader definition of private credit, which includes private placements and mortgage loans, private credit already represents a materially larger share of the investment portfolios of some insurers. Based on the ECB's Financial Stability Review[4], Euro-area insurers are the most exposed euro-area financial institutions to private credit, holding around EUR 211 billion (approximately 2.3% of total assets), concentrated in a small number of large institutions.

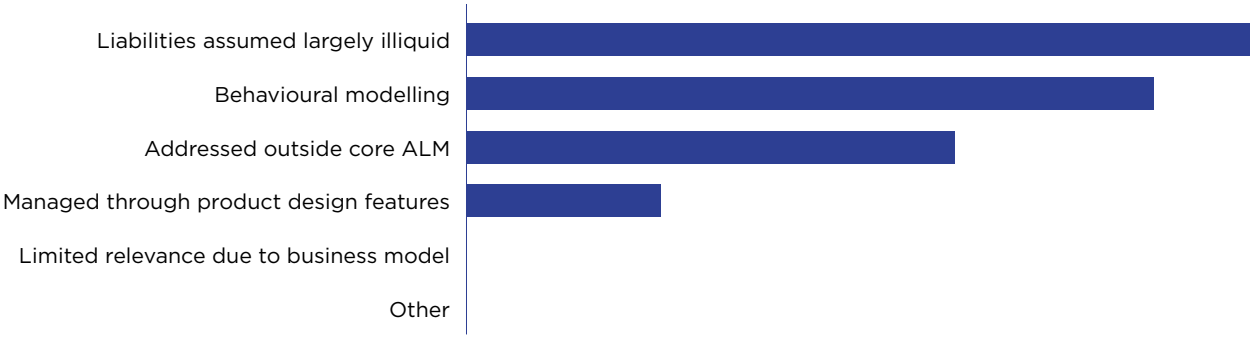
Private debt also brings its own ALM challenges, notably determining the required capital for instruments such as middle-market loans, modelling optionality and a reliance on third-party pricing. These rising allocations are under growing supervisory scrutiny, with BaFin, EIOPA and the IAIS all commenting on private debt in 2025 and 2026. EIOPA notes in particular that capital requirements capture credit and concentration risk but do not cover all vulnerabilities and that supervisors are expected to use the Prudent Person Principle to challenge excessive illiquid exposures and require robust valuation practices[5].

Liability liquidity and its reflection in ALM

The liquidity characteristics of liabilities are a critical, yet often underappreciated, component of insurer liquidity management. Approaches vary significantly across insurance companies, reflecting differences in business models, liability profiles and product structures. Insurers split fairly evenly between assuming liabilities are largely illiquid and explicitly modelling dynamic lapse / surrender behaviour, with others relying on product design (lock-ups, penalties) or a separate liquidity framework. Long-term guaranteed savings business accepts some illiquidity to cover long-dated payouts, whereas shorter, less guarantee-linked business prioritises holding liquid assets to settle claims. A key consideration is that liabilities illiquid under normal conditions can become liquid under stress (e.g. combined interest-rate-rise and mass-lapse scenarios) as illustrated by the Eurovita case study.

Incorporation of liability (il)liquidity in the ALM framework

Survey question 5.4: How is the (il)liquidity of liabilities explicitly reflected in your ALM framework? Single Choice



[4] Source: https://www.ecb.europa.eu/press/financial-stability-publications/fsr/special/html/ecb.fsrart202605_04~3f2135af91.en.html
[5] Source: https://www.eiopa.europa.eu/publications/financial-stability-report-june-2026_en

CASE STUDY

Eurovita (2023) – when asset and liability illiquidity crystallise together[6]

The interaction between asset and liability illiquidity is not merely theoretical, as the case of the Italian life insurer Eurovita[7] illustrates. The case has been discussed in public supervisory and industry publications and is used here solely as an illustrative example of liquidity stress in life insurance. It should not be interpreted as representative of the broader European life insurance sector, where most insurers did not experience comparable increases in lapse or surrender activity during the period.

Through 2022 the sharp rise in interest rates depressed the market value of Eurovita's predominantly long-dated bond portfolio, generating significant unrealised losses, while at the same time making its guaranteed policies less attractive relative to newly available yields. This gave policyholders a strong incentive to surrender, and surrender values did not fall with the bonds. The episode illustrates a scenario in which normally 'sticky' liabilities turn liquid under stress: a wave of redemption requests that could only be met by selling assets that had themselves fallen in price, realising the losses. In early 2023 the Italian supervisor IVASS placed Eurovita under special administration and, exceptionally, suspended policyholders' surrender rights to prevent a self-reinforcing liquidity spiral, before a consortium of insurers organised an orderly transfer of roughly EUR 10 billion of policies. The case is a reminder that, under specific circumstances, a combined interest-rate-rise and mass-lapse scenario makes asset-side and liability-side illiquidity crystallise at the same moment, and it is one reason the Solvency II Review places greater emphasis on liquidity risk management and company-specific liquidity metrics.

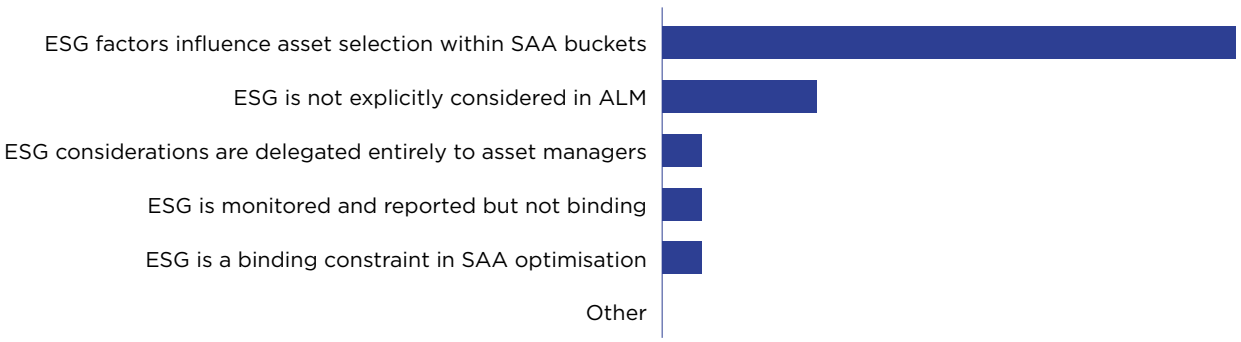
3. ESG considerations in ALM and investment strategy

Similar to the trade-offs discussed in Chapter 3, Environmental, Social and Governance (ESG) considerations may introduce additional constraints that interact with traditional solvency, return and liquidity objectives. ESG has become an increasingly important consideration in investment and ALM, driven by evolving regulation (including SFDR, the EU Taxonomy, CSRD and supervisory expectations) as well as by the growing importance of physical and transition climate risks affecting both assets and liabilities. The key question for insurers is no longer whether ESG should be considered, but rather how deeply sustainability considerations should be embedded within ALM decision-making.

Survey results indicate that ESG integration is now widespread across the insurance sector, although most firms remain at an intermediate stage of maturity. The predominant approach is to incorporate ESG considerations into investment decisions within Strategic Asset Allocation (SAA) buckets, influencing asset selection, portfolio tilts and screening decisions. A smaller group of insurers monitor and report ESG metrics without those metrics directly constraining investment or ALM decisions, while only a limited number of respondents have incorporated ESG as a binding constraint in SAA optimisation. Very few insurers delegate ESG entirely to external asset managers or exclude ESG from their ALM framework altogether.

Integration of ESG considerations in ALM and investment strategy

Survey question 5.5: How are Environmental, Social and Governance (ESG) considerations reflected in your ALM and investment strategy



[6] Sources: SUERF Policy Note, "Surging interest rates: higher surrender payouts affect life insurers' liquidity risk" (2024) (https://www.suerf.org/publications/suerf-policy-notes-and-briefs/surging-interest-rates-higher-surrender-payouts-affect-life-insurers-liquidity-risk/)

[7] IVASS special-administration and surrender-suspension measures for Eurovita (2023) (https://www.ivass.it/media/avviso/eurovita-30-06/?com.dotmarketing.htmlpage.language=3)

Solvency II Review changes impacting the ALM framework

Survey question 5.6: Which of the following Solvency II Review changes will have a significant impact on your ALM framework? Multiple Choice



These findings suggest that ESG is currently viewed primarily as an investment overlay rather than a core ALM optimisation variable. Climate scenarios, sustainability metrics and ESG scores are increasingly embedded in risk analysis and reporting, but their influence on strategic balance-sheet steering remains limited. As a result, ESG integration is generally deeper at the portfolio construction level than at the strategic balance-sheet level.

However, the direction of travel appears clear. As supervisory expectations continue to evolve and sustainability risks become more explicitly linked to long-term solvency, capital management and liability valuation, insurers may increasingly move from monitoring and within-bucket ESG integration towards incorporating ESG-related objectives and constraints directly into ALM optimisation and strategic asset allocation decisions.

4. Solvency II Review: Implications for ALM

The Solvency II Review represents one of the most significant updates to the European insurance regulatory framework since its introduction in 2016. The revised framework will become effective on 30 January 2027. While many of the changes are technical in nature, they have important implications for insurers' ALM practices. The review affects the valuation of liabilities, capital requirements, liquidity management and risk measurement, thereby influencing how insurers design and execute their ALM and investment strategies. Key areas impacted include the extrapolation of the risk-free yield curve, the Volatility Adjustment, the risk margin and enhanced liquidity risk management requirements.

Asked to rank these, most insurers see the Credit Spread Sensitivity Ratio (CSSR)[8] as the most significant change for their ALM framework. It ranks ahead of risk margin changes and yield-curve extrapolation (prompting a re-assessment of duration matching and hedging), with the Enhanced Prudency Principle (EPP) seen as least significant.

The key impact to ALM arises from the changes to the risk-free interest rate curve, the Volatility Adjustment (VA) and the risk margin. The revised extrapolation methodology increases the sensitivity of long-term liabilities to movements in interest rates, requiring insurers to reassess duration matching strategies and, in some cases, increase the use of long-dated bonds or interest rate derivatives. At the same time, changes to the VA framework, including the introduction of the CSSR, necessitate more sophisticated modelling of the interaction between asset spreads and liability valuation to avoid unintended over-hedging of spread risk.

The review also places greater emphasis on liquidity risk management. Insurers will be required to develop liquidity risk management plans and establish appropriate liquidity metrics. As a result, ALM frameworks must place greater focus on projecting realistic cash flows under both normal and stressed conditions. This reflects a broader regulatory trend towards enhanced liquidity monitoring and stress testing, recognising that solvency and liquidity risks are increasingly interconnected.

Beyond the quantitative changes, the Solvency II Review has important implications for governance, data and operating models. Insurers are expected to adapt processes, systems, controls and reporting frameworks to accommodate the revised requirements. Consequently, ALM is becoming even more central to integrated balance sheet management, providing the link between investment strategy, risk management, capital planning and regulatory compliance.

[8] The CSSR is a component of the calculation of the Volatility Adjustment (VA)

CASE STUDY

CSSR considerations under the Solvency II Review

A European life insurer has a **Credit Spread Sensitivity Ratio (CSSR)** below 100%. CSSR is a key factor in the calculation of the **Volatility Adjustment (VA)** and is intended to determine how effectively liability values respond to changes in credit spreads. A CSSR below 100% means that spread widening is only partially offset by the VA, increasing solvency ratio volatility.

The insurer's low CSSR is driven by the very long duration of its liabilities. The insurer relies on long-dated interest rate swaps as long-dated bond markets are relatively illiquid. While these swaps effectively hedge interest rate risk, they do not contribute to CSSR because they do not generate VA-eligible spread exposure.

The insurer evaluates several measures that may improve CSSR while supporting its broader ALM objectives, including:

- **Increase allocations to long-duration government and high-quality corporate bonds.** Physical bonds contribute to the VA framework and may improve CSSR relative to swap-based hedging strategies. However, long-dated bond markets are often relatively illiquid and higher allocations may increase concentration risk in a limited set of issuers or sovereigns.
- **Reduce exposure to non-euro bonds.** Depending on the applicable VA framework, non-euro assets may provide limited support for CSSR, even when currency risk is hedged. Reallocating part of the portfolio towards euro-denominated assets may improve CSSR, but could also reduce geographical diversification and affect the portfolio's overall risk-return profile.

This case illustrates how the Solvency II Review may introduce additional interactions between economic ALM decisions and regulatory metrics. While CSSR is not an ALM objective in itself, it may act as a constraint or consideration that influences asset allocation choices and the effectiveness of the VA during periods of spread stress.

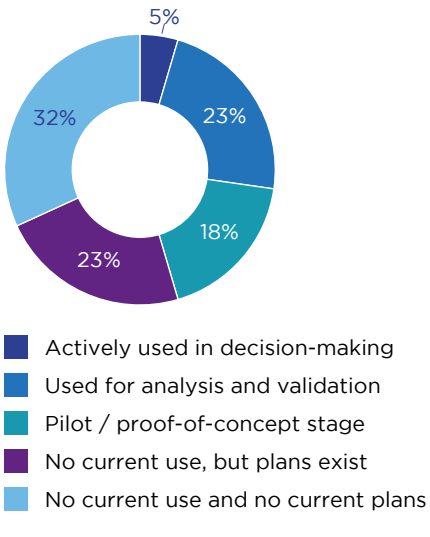
5. Artificial intelligence and advanced analytics in ALM

Unlike the previous topics in this chapter, Artificial Intelligence (AI) does not introduce a new balance-sheet risk. Instead, it has the potential to improve the quality of ALM decision-making across all dimensions discussed throughout this paper. AI and advanced analytics have transformed many parts of the insurance value chain, but within ALM their adoption remains at a relatively early stage. Survey results indicate that only a small minority of insurers currently use AI directly in ALM decision-making, such as optimisation or scenario generation. Among respondents already using AI in ALM, most apply it primarily to analytical support, validation, model development and process automation; while a significant proportion remain in the pilot or proof-of-concept phase or are still evaluating future applications. Overall, insurance companies have started to integrate AI in their ALM toolkit, but it has not yet become a core steering mechanism.

Alongside general analytical enhancements, insurers are increasingly applying AI to automate routine ALM activities, including coding, data analysis, reporting and workflow management. These applications are primarily aimed at reducing manual effort, improving scalability and increasing operational efficiency. Several respondents also highlighted the growing use of Generative AI and Large Language Models (LLMs) to support model documentation, development activities and knowledge management.

Extent of AI and advanced analytics usage in ALM

Survey question 5.7: To what extent are Artificial Intelligence or advanced analytics techniques used within ALM? Single Choice



AI is also becoming an important component of ALM control and validation frameworks. Current use cases include validation checks, anomaly detection and the review of ALM inputs, outputs and reporting artefacts such as Quantitative Reporting Templates (QRTs), sensitivity reports and other risk-management outputs. These applications are viewed as a practical way to strengthen model governance and improve the consistency and reliability of ALM analyses.

A smaller group of insurers is experimenting with more advanced applications such as scenario-based machine learning, portfolio optimisation tools and specialised asset analysis. While these use cases demonstrate the potential for AI to contribute directly to investment strategy and balance-sheet optimisation, they remain largely experimental and have yet to be widely embedded in strategic decision-making processes.

Looking ahead, AI has the potential to support a broader range of ALM activities, including scenario generation, multi-objective portfolio optimisation, faster cash-flow projections, forecasting, early-warning systems and dynamic hedging strategies. However, wider adoption is likely to depend on progress in model explainability, data quality, system integration and governance, which remain the principal barriers to the use of AI in core ALM decision-making.

These governance questions are common to all AI applications in insurance and are addressed in the CRO Forum paper AI Governance & Compliance (August 2026), which sets out expectations on AI risk classification, lifecycle governance, board oversight and AI risk appetite. The demands identified elsewhere in this chapter point in the same direction. Look-through and cash-flow modelling for illiquid assets, dynamic lapse and surrender behaviour on the liability side, the more granular cash-flow projections expected under the Solvency II Review and the data quality on which any ESG integration depends are constrained by analytical capacity and data transparency rather than by judgement. These are precisely the areas in which survey participants report applying AI first, which supports a view of its contribution to ALM as improving the information on which decisions rest rather than as making the decisions themselves.



Key takeaways

The survey results confirm that ALM should not be considered in isolation, as it is also shaped by, among others, the following factors:

- Liquidity is an increasingly important ALM constraint as allocations to illiquid assets grow, with the key consideration being the ability to generate sufficient liquidity under stress.
- The Solvency II Review is not just a regulatory recalibration; it materially affects ALM decision-making by increasing the need for more integrated interest-rate, spread and liquidity risk management across the balance sheet.
- ESG integration is now common across insurers, but remains largely an investment-level overlay rather than a core ALM optimisation factor, although regulatory and sustainability pressures are expected to drive deeper incorporation of ESG objectives and constraints into strategic ALM and SAA decisions over time.
- AI has entered the ALM toolkit but not yet ALM decision-making. Its adoption is concentrated in automation, validation and documentation rather than in optimising the balance sheet itself. CROs should therefore treat the remaining barriers (e.g. model explainability, data quality or system integration) as general AI governance questions rather than ALM-specific ones, which are for example addressed in the CRO Forum paper AI Governance & Compliance (August 2026).

6. ALM Validation and Control Framework

1. ALM validation scope

Understanding how ALM interacts with the broader risk and finance landscape provides important context for its strategic value at a (re-)insurance company. Yet, the ability of ALM to support management and business decisions relies on the credibility and reliability of its outputs and the effectiveness of its governance. This naturally leads to an examination of the validation and control framework underpinning ALM processes and models. In essence, ALM Validation provides independent assurance that ALM models remain fit for purpose.

ALM validation encompasses a broad range of activities designed to assess both the technical soundness of models and the effectiveness of the governance framework surrounding them (described in Chapter 2). At its core, validation focuses on the review of model outputs, the quality and appropriateness of input data, model functionality, and the adequacy of methodologies used to represent balance sheet behaviour and risk exposures, which were described in Chapter 3 (ALM Targets and Metrics). The objective is to determine whether model results are robust, consistent with economic reality, and suitable for the intended business and risk management purposes.

ALM validation also considers governance and control-related aspects, including the quality of documentation, model development and change management processes, and the effectiveness of the overall control environment. In the case study in Chapter 2 regarding restrictions on access to certain asset classes, robust validation activities should be able to identify instances of such investments.

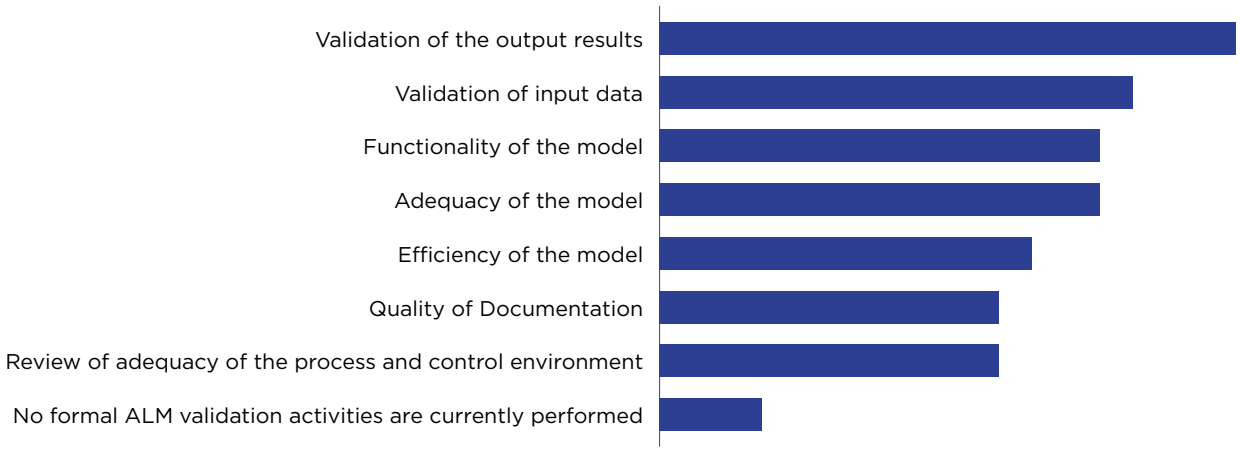
Survey results confirm that validation typically focuses on model outputs, data quality and methodological adequacy. While industry practice often places greater emphasis on testing model performance and data quality, governance and process reviews remain important components of a mature ALM validation framework as they help ensure transparency, accountability, and long-term model sustainability. As an example, a robust validation framework enables firms to monitor hedge effectiveness against the targeted metric, a topic discussed further in Chapter 3.

2. Types of validation activities

Regular validation is essential to ensure that ALM models produce reliable and decision-useful results and form an important component of the broader ALM governance framework. Consistent with the principles of independent challenge and the three lines of defence model described earlier in chapter two, validation is typically performed by an independent second-line function, providing an objective assessment of the methodologies, assumptions and outputs produced by the first line.

Governance aspects covered in ALM validation

Survey question 6.1: Which of the following aspects from the governance perspective are conducted as part of ALM Validation? Multiple Choice



Across the surveyed companies, validation practices show a high degree of consistency. Backtesting, scenario analysis and benchmarking are the most widely used techniques, reflecting a common view that effective validation should combine both historical evidence and forward-looking assessments while providing assurance to ALCO, Risk Committees and senior management that ALM decisions are supported by robust analysis.

Backtesting

Backtesting is used by almost all respondents and involves comparing model projections with realised outcomes. The objective is to assess predictive accuracy and identify potential model weaknesses, inappropriate assumptions or calibration issues. Repeated backtesting over time helps strengthen confidence in the model's ability to capture key risk drivers and supports the governance objective of ensuring that assumptions remain appropriate as business and market conditions evolve. When deviations from expected outcomes occur, effective backtesting can help determine whether they can be attributed to known factors, such as basis risk, inflation, stale pricing or other effects described in Chapter 3 and 4 or whether they stem from risk exposures that have not been properly identified.

Two recent case studies later in this chapter illustrate how backtesting can help companies identify and gain a deeper understanding of their risk exposures. Periods of market stress are particularly informative in this regard, as they can reveal weaknesses in models, hedge effectiveness and risk management practices that may not be apparent during more stable market environments.

Scenarios

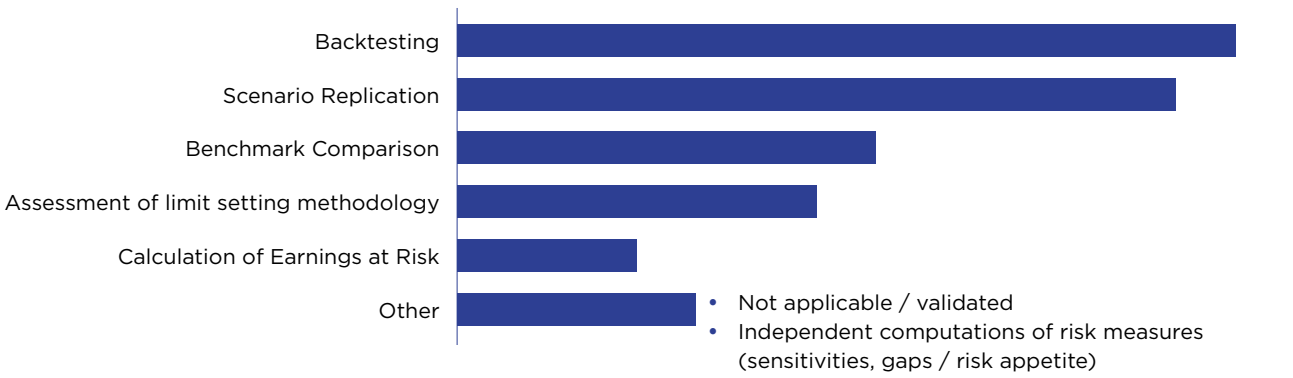
Scenario analysis is also widely applied as part of the validation process. Models are assessed under predefined stress scenarios, such as interest rate shocks, yield curve movements or liquidity stresses, to verify that outputs react in a way that is economically intuitive and consistent with expectations. This provides assurance that the model responds appropriately to key risk factors and supports the governance requirement for assessing risks holistically under severe but plausible scenarios.

Benchmarking

Benchmarking compares ALM results against alternative models, simplified approaches or independent calculations. The purpose is not to obtain identical results but to ensure that differences can be explained. Such differences may stem from the methodologies used to calculate risk metrics. For example, modified duration may be reported on an option-adjusted basis, while volatility may be estimated from historical data or derived using GARCH models and other statistical techniques. Significant deviations may indicate issues related to methodology, assumptions or model design and therefore warrant further investigation. However, some differences are expected and reflect legitimate variations in modelling approaches. The treatment of future business, as described in Chapter 4, provides a useful example, as differing assumptions can materially influence the reported results. As such, benchmarking serves as an important mechanism for independent challenge, helping to distinguish between explainable differences and genuine model weaknesses while increasing transparency regarding model limitations and uncertainties.

ALM validation approach

Survey question 6.2: How are the predictive accuracy and reliability of the ALM framework assessed during the validation of ALM outputs? Multiple Choice



CASE STUDY 1

ALM validation lessons from the Eurovita crisis

As illustrated by the Eurovita case study in Chapter 5, apparently stable insurance liabilities can be settled or lapse more quickly under stress. As interest rates rose sharply in 2022, the market value of Eurovita's long-dated bond portfolio declined while policyholders became increasingly incentivised to surrender guaranteed policies and reinvest at higher market yields. The resulting surge in surrender requests created liquidity pressure precisely when asset values were depressed, ultimately leading IVASS to place the insurer under special administration and temporarily suspend surrender rights.

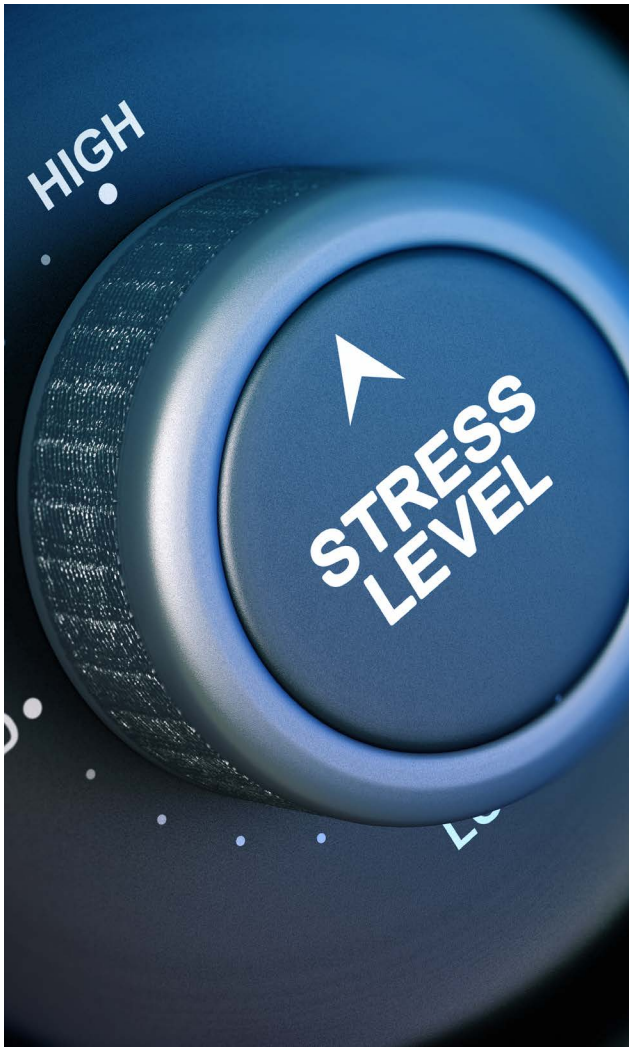
From an ALM validation perspective, the Eurovita case should be interpreted as an illustrative example rather than a representative industry experience. While most European life insurers did not experience comparable increases in surrender activity during the period, the case highlights how policyholder behaviour may change under specific circumstances and interact with market and liquidity risks. A robust validation framework should therefore challenge behavioural assumptions, assess whether surrender and lapse models remain appropriate under changing market conditions and evaluate severe but plausible combinations of interest-rate, liquidity and policyholder behaviour stresses. The objective is not to predict isolated events, but to ensure that key assumptions, controls and management actions remain robust under adverse conditions.

Methodologies used for limit setting

Several companies also validate the methodologies used to establish risk limits, including liquidity thresholds, interest rate risk limits and risk appetite metrics. Validation focuses on assessing whether limits are appropriately calibrated, aligned with the institution's risk appetite and supported by underlying model outputs. This helps ensure consistency between the ALM framework, the risk appetite set by the Board and the operational monitoring undertaken through ALCO and other governance forums.

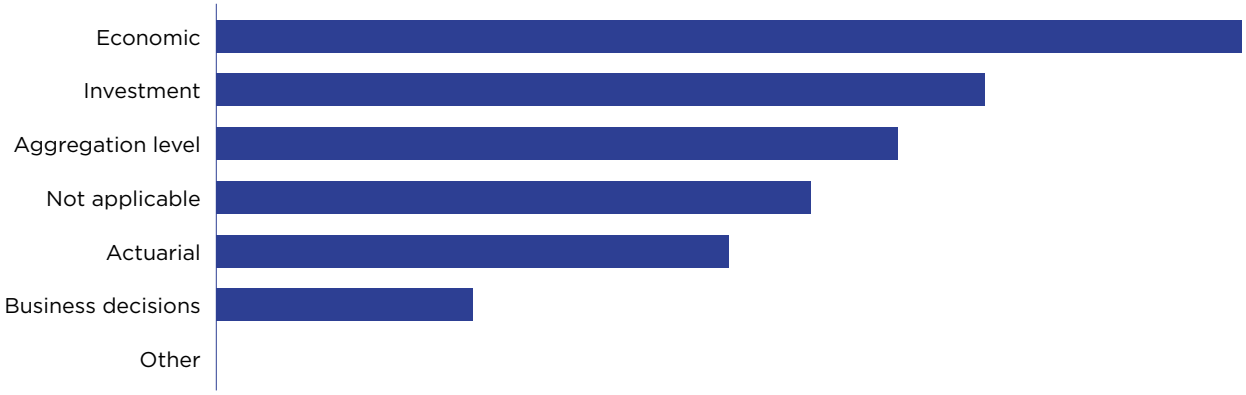
Calculation and validation of key risk metrics

Closely linked to the validation of risk limits is the calculation and validation of the key risk metrics used to monitor the objectives of the ALM framework and compliance with those limits. The survey results presented in chapter 3 showed that insurers pursue multiple ALM objectives, with solvency protection being the most prominent, alongside economic value preservation, liquidity management and sustainable returns. Key risk metrics help assess whether these objectives are being achieved and whether the insurer remains within its approved risk appetite. Examples include solvency ratios, liquidity measures, interest rate sensitivities, and, for some insurers, Earnings at Risk (EaR). Validation focuses on ensuring that these metrics provide a reliable basis for monitoring and decision-making.



Level of granularity in assessing actual vs expected P&L deviation

Survey question 6.3: In case you compute a decomposition of actual vs. expected P/L, what is the level of granularity at which you assess deviations? Multiple Choice



3. Actual versus expected P&L decomposition

For ALM Validation, P&L decomposition is most effective when deviations are assessed across multiple granularity dimensions:

- Economic factors (e.g. interest rate, FX changes)
- Investment decisions (such as rebalancing, asset allocation changes or duration)
- Aggregation levels (group, legal entity, portfolio)
- Actuarial assumptions (such as claims frequency, mortality assumptions or lapse)
- Business decisions (e.g. line of business or pricing adjustment/discontinuity)

This multidimensional analysis enables validators to distinguish between model deficiencies and genuine changes in market or business conditions, thereby strengthening confidence in ALM model performance and governance.

Based on survey results, actual versus expected P&L deviation analysis is predominantly performed at the economic and investment levels, reflecting a focus on understanding broad financial and portfolio performance drivers. More granular assessments, such as actuarial or business decision-level analyses, are less common. This may reflect a greater focus on explaining overall balance-sheet and portfolio outcomes than on detailed operational attribution. It may also indicate that actuarial analyses are often performed within separate processes or governance frameworks outside the ALM validation function. Results suggest that companies generally prioritize strategic and aggregated views over detailed operational attribution within actual vs expected P&L deviation assessment.

It is important to note that various ALM model limitations can be addressed by validation. In this paper various model challenges were mentioned such as valuation of illiquid assets, extrapolated cash flows and long-duration liabilities and assumptions regarding management actions. In these cases, inputs to assumptions cannot be directly observed or reliably calibrated from market data. The role of validation is therefore not to prove that assumptions are correct, but to assess whether they are reasonable, sufficiently evidenced and appropriately reflected in decision-making. In the case of illiquid assets, projected cash flows from private debt, infrastructure loans or commercial mortgages may be tested against actual repayment experience, defaults and recoveries observed in both internal portfolios and external benchmarks. For policyholder behaviour, validation may assess whether dynamic lapse assumptions reflect actual policyholder reactions to changing interest rates, such as increased surrender rates when market yields materially exceed credited rates. For long-duration liabilities, validation challenges the robustness of extrapolated cash flows beyond observable experience periods, for example by assessing the sensitivity of annuity or pension obligations to mortality, longevity and discount-rate assumptions over horizons extending several decades. By highlighting these uncertainties and their potential impact on solvency and risk metrics, validation strengthens confidence in ALM results while ensuring that key model limitations remain transparent to management.

ALM validation is itself subject to limitations that mirror many of the underlying ALM model limitations, arising from the scarcity of observable data, the long-term nature of many insurance liabilities and the uncertainty surrounding future economic and behavioural developments.

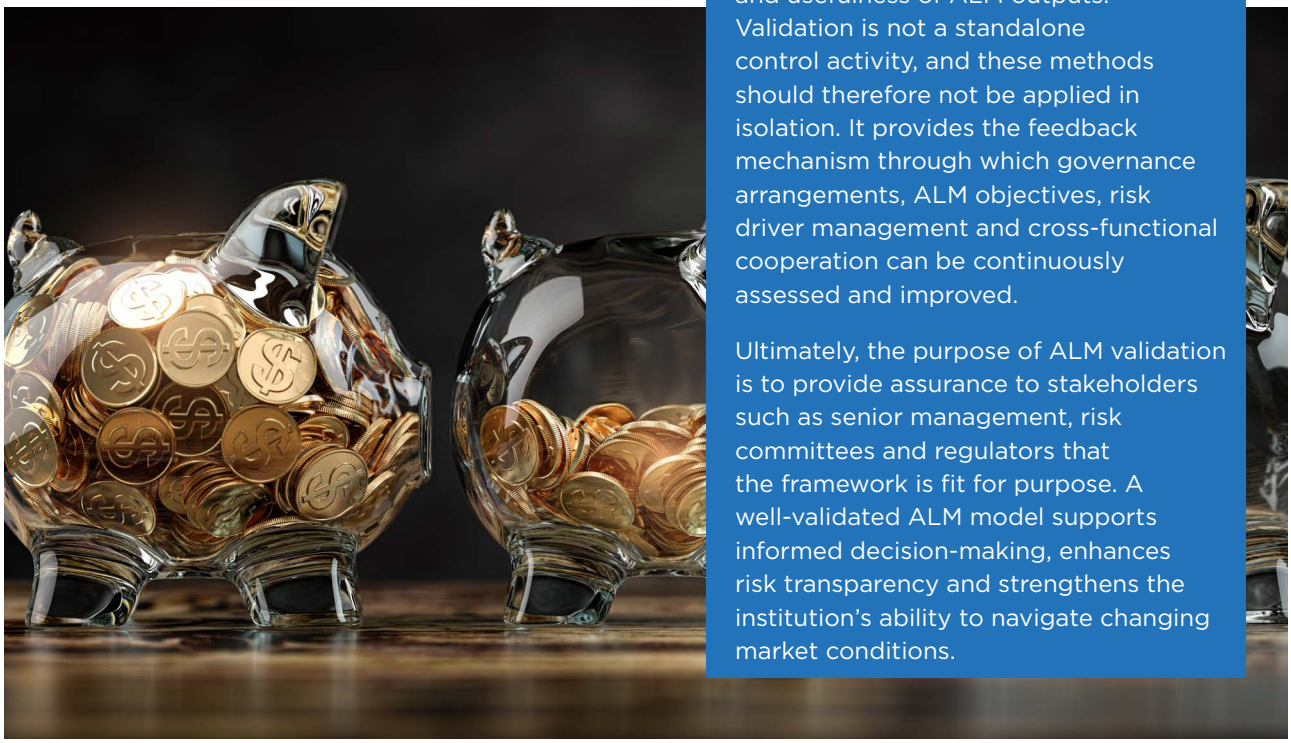
CASE STUDY 2
Inflation spike in 2022

The limitations of the companies' risk models are often identified through validation tools during periods of market stress. A recent example was the inflation crisis of 2022 and 2023. During this period, models used to assess interest rate and inflation sensitivity were subjected to significant stress and several firms observed through their validation frameworks that certain aspects of these risk factors were not being adequately captured, including the correlation between interest rates and inflation.

At the same time, policy interventions altered some of the underlying model assumptions. In several countries, rental income is at least partly linked to consumer price inflation through contractual indexation mechanisms. However, during the inflation crisis, several European countries, including Denmark, Germany and Spain, introduced limits on rent increases, effectively weakening the pass-through from inflation to rental income.

Consequently, rental properties became less effective than models had assumed. This reduced the degree of protection provided by real estate assets and raised concerns as to whether inflation-sensitive liabilities remained adequately hedged. Robust validation frameworks can help to decompose portfolio and model performance, thereby isolating the effects of extraordinary events such as these. Based on such analyses, firms can assess whether adjustments to their hedging strategies are warranted, for example by increasing the use of more direct inflation-linked instruments such as inflation swaps.

Validation can assess the reasonableness and robustness of assumptions, but it cannot fully eliminate uncertainty or conclusively demonstrate the future accuracy of model projections. Validation therefore provides reasonable assurance regarding model fitness for purpose rather than a guarantee of correctness. As a result, ALM validation remains reliant on expert judgement, sensitivity analysis, benchmarking and qualitative challenge, with residual model risk persisting even after all validation activities have been completed.



Key takeaways

Taken together, these validation techniques provide a comprehensive framework for assessing the reliability and usefulness of ALM outputs. Validation is not a standalone control activity, and these methods should therefore not be applied in isolation. It provides the feedback mechanism through which governance arrangements, ALM objectives, risk driver management and cross-functional cooperation can be continuously assessed and improved.

Ultimately, the purpose of ALM validation is to provide assurance to stakeholders such as senior management, risk committees and regulators that the framework is fit for purpose. A well-validated ALM model supports informed decision-making, enhances risk transparency and strengthens the institution's ability to navigate changing market conditions.

7. Conclusion and Outlook

Conclusion

The survey results and working group discussions indicate that ALM has evolved significantly beyond its traditional focus on duration matching and regulatory compliance. Across participating firms, ALM is increasingly viewed as an integrated balance sheet steering discipline that links Risk, Investments, Finance, Capital Management and Liquidity Management.

While governance structures, operating models and business profiles differ across firms, several common themes emerge. First, protecting solvency has become a central objective of many ALM frameworks. Second, ALM is inherently a multi-objective discipline requiring firms to balance solvency, economic value, liquidity, profitability and accounting considerations rather than optimise a single metric. Third, increasing balance sheet complexity has elevated the importance of liquidity management, model validation and cross-functional decision-making.

Overall, the survey suggests a relatively high level of ALM maturity across the industry. At the same time, the diversity of approaches observed among participants confirms that there is no single optimal ALM framework. Effective ALM remains highly dependent on each firm's liabilities, business model, strategic objectives and risk appetite. Ultimately, successful ALM is defined not by the optimisation of a single metric, but by the ability to make coherent balance sheet decisions when multiple objectives, constraints and stakeholders interact simultaneously.

Figure 7.1: Emerging ALM challenges identified by survey respondents. The figure summarises recurring themes from free-text responses and illustrates their expected relevance across key ALM dimensions.

Future challenge	Solvency	Economic Value	Liquidity	Earnings	Governance
Managing competing objectives	◎	◎	◎	◎	◎
Private assets & illiquidity	○	◎	◎	○	○
Market constraints & hedging	◎	◎	○	○	·
Governance complexity	○	○	·	○	◎
Data, AI & analytics	·	○	·	○	◎

Outlook

Looking ahead, three developments are expected to reshape insurance ALM frameworks over the coming years.

First, insurers will increasingly need to reconcile multiple balance-sheet perspectives simultaneously. Solvency II, IFRS, liquidity, earnings and economic value metrics will continue to coexist, requiring more integrated steering approaches rather than additional standalone metrics.

Second, the growing role of private and illiquid assets will require ALM frameworks to move beyond traditional duration-based approaches towards a broader assessment of liquidity, optionality, valuation uncertainty and cash-flow resilience.

Third, advances in analytics, automation and artificial intelligence are expected to improve modelling, scenario analysis and validation processes. However, survey responses suggest that near-term value creation will primarily arise from enhanced analytical capabilities and operational efficiency rather than fully automated ALM decision making.

















































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