

INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS



STANDARD ON ASSET-LIABILITY MANAGEMENT

OCTOBER 2006

This document was prepared by the Solvency and Actuarial Issues Subcommittee in consultation with IAIS Members and Observers.

This publication is available on the IAIS website (www.iaisweb.org).

© *International Association of Insurance Supervisors 2006. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

Standard on asset-liability management

Contents

1. Introduction.....	3
2. Purpose and Framework for ALM.....	5
3. ALM Measurement Techniques.....	6
4. Risks Covered By ALM.....	7
5. An Insurer's Risk Tolerance and Related ALM Policies	9
6. ALM for Different Product Lines	10
7. Inter-relationship of Insurer Functions	11
8. Controls and Reporting.....	12

1. Introduction

1. This paper describes best practices for asset-liability management (ALM) that a well managed insurer would be expected to follow and identifies 11 minimum requirements. Supervisors should ensure that insurers in their jurisdiction meet these requirements.

2. The requirements set out in this standard apply to both life and non-life business. Insurers should understand the risks they are exposed to and develop ALM policies to manage them effectively. They should apply techniques appropriate for the nature of their business, the risks they undertake and local market conditions. Every insurer should have an ALM policy, but not all ALM risks need to be assessed using complex techniques. For example, simple or short term business may call for less complex ALM techniques. The IAIS developed the *Issues paper on asset-liability management* (2006) to accompany this paper. It provides additional information on asset-liability measurement and management techniques and contains an appendix with definitions of ALM related terms.

3. Some insurers use Enterprise Risk Management (ERM) as part of their strategic decision-making framework to exploit opportunities to create value and optimise their risk/reward profile. ERM considers all sources of risk¹ to an insurer. This paper limits itself to ALM, which is a vital element within an ERM framework. The IAIS plans to develop a standard on risk management more generally as part of its future work.

Definition of Asset-liability management

4. Asset-liability management (ALM) is the practice of managing a business so that decisions and actions taken with respect to assets and liabilities are coordinated. ALM can be defined as the ongoing process of formulating, implementing, monitoring and revising strategies related to assets and liabilities to achieve an organisation's financial objectives, given the organisation's risk tolerances and other constraints. ALM is relevant to, and critical

¹ Operational risk is an example of a risk covered by ERM and not ALM.

for, the sound management of the finances of any organisation that invests to meet its future cash flow needs and capital requirements.²

5. The IAIS *Insurance core principles and methodology (2003)* (ICPs) provide a globally accepted framework for the regulation and supervision of the insurance sector. The core principles that relate directly to ALM are:

ICP 18: Risk assessment and management: The supervisory authority requires insurers to recognise the range of risks that they face and to assess and manage them effectively.

Essential Criteria a: The supervisory authority requires and checks that insurers have in place comprehensive risk management policies and systems capable of promptly identifying, measuring, assessing, reporting and controlling their risks.

Essential Criteria b: The risk management policies and risk control systems are appropriate to the complexity, size and nature of the insurer's business. The insurer establishes an appropriate tolerance level or risk limit for material sources of risk.

ICP 21: Investments: The supervisory authority requires insurers to comply with standards on investment activities. These standards include requirements on investment policy, asset mix, valuation diversification, asset-liability matching, and risk management.

Essential Criteria i: The supervisory authority requires that insurers have in place effective procedures for monitoring and managing their asset-liability positions to ensure that their investment activities and asset positions are appropriate to their liability and risk profiles.

6. The need for an appropriate application of ALM is also addressed in two other IAIS papers:

i) Standard on asset management by insurance companies (December 1999), Paragraph 4: A key driver of the asset strategy adopted by an insurer will be its liabilities profile, and the need to ensure that it holds sufficient assets of appropriate nature, term and liquidity to enable it to meet those liabilities as they become due. Detailed analysis and management of this asset-liability relationship will therefore be a pre-requisite to the development and review of investment policies and procedures which seek to ensure that the insurer adequately manages the investment-related risks to its solvency. The analysis will involve, inter alia, the testing of the resilience of the asset portfolio to a range of market scenarios and investment conditions, and the impact on the insurer's solvency position.

ii) Guidance paper on investment risk management (October 2004), Paragraph 8: This paper should be considered in conjunction with other principles, standards or guidance papers developed by the IAIS, in particular the *Principles on capital adequacy and solvency* (2002), the *Solvency control levels guidance paper* (2003) and the *Stress testing by insurers guidance paper* (2003). Given the particular importance of the liability structure in determining the investment policies, and the key role of asset-liability management for insurers, this paper should be considered together with any IAIS work thereon.

² From Society of Actuaries, *Specialty Guide on ALM* (2003)

2. Purpose and Framework for ALM

7. While ALM is a well-established discipline in the insurance industry in many jurisdictions, ALM techniques are still evolving. For life business, ALM initially focused on asset-liability matching, with the primary goal of minimising interest rate risk, whereas for some types of non-life business ALM attempted to manage volatile outcomes more appropriately. Nowadays, for most insurers, ALM has changed to focus also on value optimisation. ALM looks at all risks requiring coordination of the insurer's assets and liabilities, especially market risk (including interest rate and credit spread risk, currency risk, equity and, sometimes, real estate risk), underwriting risk and liquidity risk. Credit risk may be an integral part of managing these risks. Only those aspects of credit risk which require the coordination of the insurer's assets and liabilities are considered part of ALM.

8. The objective of ALM is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits. In setting limits for particular types of risk, the insurer should consider its solvency position and its risk tolerance. Limits should be set after careful consideration of corporate objectives and circumstances, and should take into account the projected outcomes of scenarios run using a range of plausible future business assumptions. Within these limits, risks can be reduced if this is cost effective, or increased, if justified by the expectation of enhanced returns and the availability of additional capital, without endangering the capacity of the insurer to meet its commitments to policyholders.

9. ALM helps insurers balance competing and legitimate objectives for growth, profit, and risk. The key is to understand and forecast changes in economic value using company and market data, appropriate company and industry specific assumptions, and appropriate financial models. An insurer should be able to forecast changes in economic values over a range of plausible and adverse scenarios (using deterministic or stochastic approaches) and to evaluate the implications of such scenarios on its solvency position.

10. The ALM implications of new products should be considered during the design process. For example, the insurer should have reasonable assurance that sufficient assets will be available with the characteristics required for the new business. In some cases, ALM considerations may lead an insurer to conclude that a product should not be offered.

11. The ALM process chosen will vary from entity to entity and reflect circumstances relevant to each insurer and external and internal constraints. External constraints include supervisory and legislative requirements, rating agency concerns, and the interests and expectations of policyholders and other stakeholders. A significant constraint is the liquidity of the assets and liabilities which may compromise the ability to price, measure and hedge exposures. In many less developed countries the lack of deep, liquid and well-functioning financial markets³ may also be a significant constraint. Internal constraints, such as asset allocation limits, reflect the insurer's management philosophy or professional judgement (although these may also be influenced by external constraints). In addition, the availability of skilled staff could pose internal constraints.

³ Under IAIS *Insurance core principle 1 Conditions for effective supervision*: a well developed and effective financial market infrastructure with well functioning money and securities markets to support the availability of both long-term and short-term investment opportunities, is an essential condition for effective insurance supervision.

Requirement I

The supervisor requires that insurers have in place effective procedures for monitoring and managing their asset-liability positions to ensure that their assets and investment activities are appropriate to their liability and risk profiles and their solvency positions.

12. The fundamental steps in an ALM process are to:

- set the insurer's risk/reward objectives and assess policyholder expectations
- identify all material risks arising from the insurer's assets and liabilities and their interaction; analyse and assess the underlying causes of each risk and the relationships between risks and external factors
- quantify the level of risk exposure using an appropriate technique and assess the expected rewards and costs (e.g., of capital) associated with the risk exposure
- apply business and professional judgement to the results in order to formulate and implement optimal ALM strategies and meet risk/reward objectives
- monitor risk exposures and revise ALM strategies and modelling assumptions as appropriate.

13. ALM focuses on economic value; that is, the value of future cash flows derived in such a way as to be consistent with market prices or using market consistent principles, methodologies and parameters. In principle, ALM takes into consideration the distribution of future asset and liability cash flows to determine the exposure to ALM risk. In practice, where available, values should be derived by direct observation or by considering replicating portfolios. If values are not observable then models should be used that recognise changes in cash flows, and changes in the economic value of those cash flows, that will arise from a range of plausible scenarios. Such models should be calibrated to appropriate observable market prices. Values should take into account the specific variability in cash flows that are inherent in some products (e.g., exposure to catastrophe risk). Accounting and regulatory values that involve non-economic considerations and conventions may also be considered within an ALM framework, representing additional constraints on the cash flows valued. Traditional risk metrics used (duration, convexity, Value at Risk (VaR), Conditional Tail Expectation (CTE) or Tail VaR, key rate, sensitivity analysis, etc.) measure the exposure of economic surplus to changes in financial variables.

Requirement II

ALM should be based on economic value and should consider the change in economic value that will arise from a range of plausible scenarios. Accounting and regulatory values that involve non-economic considerations and conventions may also be considered within an ALM framework, representing additional constraints on the cash flows valued.

3. ALM Measurement Techniques

14. Insurers use different ALM techniques to measure the amount of risk to which the business is exposed. The type of measurement tools used should be consistent with the risk characteristics of the business, as well as the circumstances of the insurer, including the

nature and sophistication of its management information systems. The choice of measurement tools should also be consistent with the capital available to the insurer as well as with the insurer's risk tolerance. Different measurement tools may be appropriate for different lines of business or categories of assets. The measurement technique used should also reflect the insurer's ALM objectives, which are set by the board of directors and senior management. For example, thinly capitalised firms may settle on preserving the monetary value of the solvency margin, whereas well capitalised firms may settle on preserving the surplus ratio. Please refer to the IAIS *Issues paper on asset-liability management* (2006) for further detail on ALM measurement techniques.

Requirement III:

The ALM measurement tools used should be appropriate to the nature and circumstances of the insurer and the risk characteristics of the line of business.

4. Risks Covered By ALM

15. For insurers, risk is inherent in doing business and may arise in many different forms. Insurers should determine which of these risks are significant and require coordination between assets and liabilities within an ALM framework. The complexity of techniques used will depend on the insurer's products and investments.

Requirement IV

The insurer should examine all risks requiring the coordination of its assets and liabilities. The ones that are significant in terms of their potential impact on economic value should be covered by an ALM framework. These may include, in whole in or in part:

- i. Market Risk
 - interest rate risk (including variations in market credit spreads)
 - equity, real estate and other asset value risks
 - currency risk
 - related credit risk
- ii. Underwriting Risk⁴
- iii. Liquidity Risk

16. Market risk includes:

- interest rate risk (including variations in market credit spreads): the risk of losses resulting from movements in interest rates and their impact on future cash flows. To the extent that assets and liabilities are not well matched, movements in interest rates can have an adverse economic impact.
- equity, real estate and other asset value risks: the risk of losses resulting from movements of market values of equities and other assets. An insurer can be exposed to adverse economic impacts to the extent that the market values of equities, real estate or other assets held do not move in line with liabilities.

⁴ This paper uses the term underwriting risk in accordance with the terminology used by the IAA. Please note that the term 'underwriting risk' as used by the IAA has a broad meaning, e.g., also including claims and expense risks. See also the definitions section in the IAIS *Issues paper on asset-liability management* (2006).

- currency risk: the risk of losses resulting from movements in exchange rates. To the extent that cash flows, assets and liabilities are denominated in different currencies, currency movements can have an adverse impact on the insurer.
- related credit risk: in coordinating its exposure to market risk an insurer may increase its exposure to counterparty credit risk. For some product lines, the concentration of investment credit risk may also directly impact the amounts payable to policyholders and require coordination.

The accompanying *Issues paper on asset-liability management (2006)* provides information on ALM measurement, and the IAIS *Guidance paper on investment risk management (2004)* provides more detail on market risks and investment risks generally, including aspects of credit risk that relate only to assets rather than their interaction with liabilities.

Requirement V

The insurer should use appropriate metrics to measure exposure to market risk and related credit risk. More sophisticated models should be used for more complex portfolios of products and investments in order to model the portfolios reliably.

17. Underwriting risk is the specific insurance risk arising from the underwriting of insurance contracts. ALM may be needed to address parts of underwriting risk.

18. For example, the uncertainty of timing and size of future claim payments, especially for non-life business, may require coordination with the assets. General rates of inflation, which can affect both claims and expenses, are also an important aspect of underwriting risk, as is claims specific inflation. Further information on particular product lines is available in the accompanying *Issues paper on asset-liability management (2006)*.

19. Coordination between assets and liabilities is also important in making allowance for any options that may influence the payments to be made under a policy. In particular, insurance contracts may have financial options that offer choices to policyholders – these include settlement options, policy loan options, over-depositing options and surrender or renewal privileges. When policyholders exercise these options, the insurer may incur additional costs over the life of the policies or have a liquidity loss.

20. While the risk of embedded options generally can not be diversified, it is important that insurers manage their assets and liabilities in a way that would mitigate the potential impact. Management might, for example, take actions such as arranging reinsurance, hedging, offsetting with other types of policies, or stopping sales of the product.

Requirement VI

The insurer should take into account risks posed by options embedded in new and in-force policies. It should identify ways to mitigate the impact of the options, while ensuring that policyholders are treated fairly. ALM should assess the possible effects such embedded options can have throughout the life of the insurance policies.

21. Liquidity risk: in an ALM context, is exposure to loss in the event that insufficient liquid assets will be available, from among the assets supporting the liabilities, to meet cash flow requirements when they are due. This may force insurers to sell assets at unfavourable

prices. The liquidity profile of an insurer is a function of both its assets and liabilities and varies with market conditions.

22. Group issues may also be relevant when managing liquidity risk both in terms of the availability of additional liquidity and the possible need to provide liquidity support to other parts of the group.

Requirement VII

The insurer should structure its assets so that it has sufficient cash and diversified marketable securities to meet its obligations as they fall due.

The insurer should have a plan to deal with unexpected cash outflows, by such means as holding sufficient liquid or readily marketable assets or by having a formal credit facility.

5. An Insurer's Risk Tolerance and Related ALM Policies

23. Factors influencing an insurer's overall risk tolerance include: management philosophy, capital capacity, rating agency and supervisory requirements. The board of directors should define its risk tolerance and review it regularly taking into account changing conditions, as well as the insurer's experience and current solvency position. ALM is one of the key processes in determining an insurer's level of tolerance for risk. It is also key for managing risk. ALM should be used by senior management to ensure that business is conducted according to board policies.

24. Senior management should develop, and present to the board of directors for approval, a strategic ALM policy that takes into account: asset-liability relationships, the insurer's risk tolerance, its long-term risk and return requirements, liquidity requirements and solvency position. Senior management is also responsible for implementing the board approved strategic ALM policy.

Requirement VIII

The board of directors should approve the insurer's strategic ALM policy, taking account of asset-liability relationships, the insurer's overall risk tolerance, risk and return requirements, solvency position and liquidity requirements. Senior management is responsible for implementing the ALM policy.

25. The insurer's risk tolerance and the way in which it is expressed and reported should be commensurate with the nature, scale, diversity and complexity of the business. The following are examples of actions and limits that an insurer might use to define its risk tolerance:

- a level of potential loss shown as the effect on net income, or another financial measure to which the financial position of the insurer is sensitive
- limits applied to particular parts of the operation (e.g., on the level of new business)
- tolerances for particular types of risk (e.g., insurance/underwriting risk, market risk, credit risk, counterparty risk and liquidity risk)

- actions (e.g., reinsuring or hedging) or risk management procedures that must be followed.

26. An insurer should have a capacity for measuring and managing the risks inherent in its business, so as to maintain its risk tolerance. An insurer should also understand the level of potential losses to which it is exposed. ALM comprises a spectrum of methods that can be used to quantify the level of current and potential risks. See the *Issues paper on asset-liability management* (2006) for examples.

27. The supervisor should be satisfied that the level of risk tolerance approved by the board of directors is appropriate to its solvency position and the expectations of its policyholders.

6. ALM for Different Product Lines

28. ALM risk differs by line of business, both in terms of the nature of the products and the appropriate investment strategies. An insurer may enhance its ability to manage risk by segmenting complementary blocks of assets and liabilities. Use of separate segments allows the insurer to tailor investment and ALM strategies to the distinctive needs of different product lines. However, the simple combination of ALM strategies appropriate for each block of business may not yield the optimum overall strategy for the insurer. It may be advantageous, for example, to manage blocks of business with offsetting risks together instead. ALM strategies will depend on available capital and the flexibility that it provides.

Requirement IX

In formulating its overall strategy, an insurer should consider the ALM strategies appropriate to the characteristics of each distinct block of business, and should also take into account the interaction between blocks.

29. Development of a specific ALM strategy is needed for lines of business that have certain characteristics, for example:

- liability payments are guaranteed to be made on pre-set dates
- asset cash flows will be reinvested
- profits are earned primarily on spread – i.e., the difference in interest received on assets and interest credited to liabilities
- the size of the interest spread profit margin is small compared to the assets and liabilities
- the duration of the liabilities is such that assets which have the appropriate duration are difficult to find
- prominent investment performance features which require suitable assets to honour the guarantees
- one or more financial options for which ALM might mean the use of dynamic hedging techniques
- the business is heavily reinsured and the insurer must pay claims prior to receiving payment from the reinsurer.

Refer to the accompanying *Issues paper on asset-liability management* (2006) for examples of ALM considerations for different products.

7. Inter-relationship of Insurer Functions

30. ALM involves a close and continuing liaison between investment, product design, pricing, valuation, marketing, IT, finance, treasury and risk management functions within an insurer. Decisions will be more informed and effective if there is a shared understanding of what others require, and can or cannot deliver. Insurers must recognise the interdependence between ALM, investment, actuarial and other departments and provide for this in the mandate of the ALM function.

31. ALM is generally an enterprise wide process and a suitable organisational structure will depend on the nature, size and complexity of the institution:

(i) in some large insurers ALM may be managed at several levels, for example at the geographical, divisional or business unit level. Also, in larger complex insurers there should be a separate corporate ALM function under the control of a senior manager. While overall coordination and monitoring of ALM needs to be from the top, ALM needs to be operationalised at the line of business or divisional level, where investments and products are being managed. A corporate ALM function needs to be free of undue restrictions and organisational pressures that would limit its effectiveness.

(ii) in smaller insurers and those with few lines of business, the ALM function is likely to be assigned to the actuarial department or the investment department (subject to an appropriate separation of duties). In such circumstances, there should still be a proper flow of information and interaction with business units and other interested parties in the company.

Requirement X:

The insurer should be organised so that there is a close and continuing liaison between the different areas that need to be involved with ALM. The organisational structure depends on the nature, size and complexity of the insurer, and should enable the organisation to maintain effective ALM.

To the extent practicable, the monitoring of ALM risk and processes should be organisationally separate from the functions overseeing investments, pricing and management of in-force business.

The mandate, roles and responsibilities of the ALM function should be clear, appropriate and well understood within the insurer.

The supervisor should examine whether the interrelationship of functions is appropriate.

32. The organisational structure of responsibilities for formulating, implementing, monitoring and revising strategies related to assets and liabilities, allocation of resources, management information and communication are particularly important for asset-liability management. The internal controls should include an adequate segregation of duties; the functions responsible for measuring, monitoring and controlling investment activities should be separate from those responsible for conducting day-to-day asset transactions (i.e.,

business unit decision makers and position takers). This is to ensure independence of the process and avoid any conflict of interest.

33. The coordination of product development, management of in-force business, investment operations and financial reporting is essential for an insurer. Insurers may assign coordination and risk management responsibility to committees or specific individuals, requiring them to act in accordance with the pre-set risk tolerance limits. Insurers should ensure that sufficient time is allocated to ALM activities and that the function is staffed with people with appropriate skills for the identification, analysis, modelling and communication of individual risks and tolerances. The design and regular production of management information are key activities in the ALM process.

34. Conflicts between corporate objectives regarding profitability, sales and risk appetite will inevitably arise. An effective ALM process provides a framework from which to measure and manage risk and returns and to negotiate and adjudicate decisions. To manage the conflicts that typically arise, it is vital that all involved parties have a deep understanding of the ALM policies and models in use.

8. Controls and Reporting

35. Insurers should be capable of identifying, monitoring, measuring, reporting and controlling the risks within their ALM strategy.

36. Senior management should review the ALM policy, related market and other risk limits and delegated authority at least annually, preferably as part of the strategic planning process, and recommend any changes for approval by the board of directors. All limits in the policies should be reviewed on a regular basis in order to verify their suitability for current market conditions and the insurer's overall risk tolerance. ALM policies should include actions to be taken if limits are breached.

37. Insurers should have a formal review process and documented sign-off procedure that includes all functions (e.g., operational management, senior management, risk management and internal audit) to ensure that new and changing ALM risks are identified. For example, changes may be required because of new products, new services, new investment mandates and ventures into new jurisdictions or growth initiatives.

38. Insurers should document their tolerances for risks. Documentation can vary and will depend on how the insurer manages its ALM process.

39. The board of directors should receive regular ALM information, including feedback from the insurer's risk management function, on asset-liability exposures and the associated risks, in a form which is understood by them and which permits them to make an informed judgement as to the level of risk to which the insurer is exposed.

Requirement XI:

The insurer should develop and implement controls and reporting procedures for its ALM policies that are appropriate for its business and the risks to which it is exposed. These should be monitored closely and reviewed regularly.

40. The level of detail that should be included in reports to the board of directors and senior management will depend on the extent of their delegation of oversight responsibilities to

others. Reporting should go to appropriate senior management members on a regular basis (monthly or quarterly for most insurers) to allow them to monitor adherence to the approved policy. The amount of detail and the level of supporting analysis, as well as the form in which it is communicated, will depend on the size and complexity of the insurer, how crucial ALM is to achieving its goals and the level of authority to which the report is addressed. Reports to senior management and the board of directors should be analytical in nature, allowing the users to draw independent conclusions. Reports prepared for operational management should be sufficiently detailed and frequent enough to enable them to effectively manage the risks on a day-to-day basis. The usefulness and timeliness of reporting, and the accuracy and integrity of reporting systems should be periodically verified.

41. ALM is often a highly technical function requiring sophisticated software, skilled personnel and timely and accurate information. If the information provided on product sales, cash flow, and commitments, for example, is inadequate, the risk management process will be severely hampered in its ability to manage risk and provide relevant input into the pricing, marketing and investment process. The insurer's systems need to provide accurate and timely information on asset and liability risk exposure and be capable of responding to ad hoc requests. Staff should be qualified and competent to successfully execute the ALM mandate. Staffing levels must be appropriate and commensurate with the size and complexity of the institution.

42. The complexity of the ALM process, including the tools and techniques used within the insurer, will impact the extent of monitoring and control. A complex system will require a sophisticated, computer based, control structure. The greater the extent of manual intervention in the process (with respect to the mechanics, not the judgments), the greater the need for hands on monitoring to prevent human error.