STANDARDS BOARD FOR ALTERNATIVE INVESTMENTS

Valuation of Insurance-Linked Funds

SBAI Toolbox

1. Introduction

This SBAI Toolbox memo on Valuation of Insurance-Linked[1] Funds reaffirms the standards and guidance on valuation included in SBAI's Alternative Investment Standards, identifies particular aspects of the process that relate to funds predominately investing in collateralised (re)insurance investments[2] ("ILS Funds"), and suggests questions that investors may wish to ask when assessing a manager's approach to valuation (usually set out in the manager's Valuation Policy Document).

For any type of fund, valuation is the process of determining the fair value[3] of the assets and liabilities that underlie the calculation of the fund's Net Asset Value at a given time. Valuation can be straight forward for funds that trade in liquid markets, where for example closing prices of securities are readily available, but it gets more difficult when assets or liabilities are less liquid or not traded at all.

ILS Funds typically invest in a spectrum of assets, ranging from catastrophe bonds (where third-party pricing indications might be available) to private collateralised (re)insurance structures linked to property catastrophe and other (re)insurance risks, where independent pricing is generally not readily available and thus the valuation of such investments is most often undertaken by the investment manager. Further valuation challenges can arise following a loss event to which such collateralised (re)insurance contracts are exposed. Therefore, ILS Funds operating in less liquid or illiquid markets should have a robust valuation framework.

Why a robust valuation framework matters to investors (and managers)

1. To address conflicts of interest between different investors	• For open-end vehicles, achieving correct valuation is important for investors that are subscribing to or redeeming from the fund. A correct valuation is needed to ensure investors are treated fairly, so that neither the subscribers, redeemers or "remainers" are favoured over each other. For example, overvaluing the fund will put remaining and subscribing (incoming) investors at a disadvantage while favouring the redeeming investors

The SBAI Toolbox is an additional aid to complement the SBAI's standard-setting activities. While alternative investment fund managers sign up to the Alternative Investment Standards on a comply-or-explain basis, the SBAI Toolbox materials serve as a guide only and are not formally part of the Standards or a prescriptive template.

[1] In this article, we use Insurance to cover all risks arising out of contracts that relate to writing insurance and which can include, for example, reinsurance and retrocession.

[2] See Appendix A for an explanation of how collateralised re-insurance works

[3] US GAAP/ IFRS definition of 'fair value': The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (see "IFRS compared to US GAAP")

	• The same applies at the level of the investor in the relevant fund. For example, subscriptions and redemptions in a fund-of-fund or the amount of payments in a pension can be affected by the valuation of the fund, which in turn depends on the underlying valuations • Where valuations are used for transfers of assets between different funds, neither fund should be favoured over the other
2. To address conflicts of interest between the manager and the investor(s)	Valuations directly affect the reported performance of a fund and will generally also affect the compensation of the manager.
3. To facilitate performance assessment	Comparison of performance of different funds based on changes in valuation is likely to influence subsequent fundraising and the allocation of capital between funds. For ILS Funds, this becomes particularly important as a large loss event may be followed soon after by fundraising.

Key features of a robust valuation framework

The valuation section of the Alternative Investment Standards[4] sets out the key features of a robust valuation framework:

1. Putting in place adequate governance arrangements in valuations (including segregation of functions, documentation)

Standard	What the Standard says
5.1	Put in place arrangements aimed at mitigating conflicts of interest
5.2	Where manager has inhouse valuation, separate valuation function[5]
6.1	Valuation policy document to cover all material aspects of the valuation process, controls and monitoring processes
8.4	Escalation of material valuation issues to the fund governing body

2. Setting out approaches to value hard-to-value assets to ensure consistency

Standard	What the Standard says
7.1	Where in-house valuation of hard to value assets is performed, valuation procedures to be aimed at ensuring consistent approach (with detailed guidance for use of pricing hierarchies, broker quotes and **pricing models**)
7.2	Use of side pockets (incl. eligible assets, timing, fees)

[4] See Appendix B for overview, the Standards are available at

[5] For ILS Funds, segregation of the valuation function from the portfolio management team is preferable (Section 5.2 of the Alternative Investment Standards) but it might be unrealistic for some funds. However, the comply-or-explain framework of the Alternative Investment Standards allows managers to explain their approach to investors.

3. Disclosure to investors and ongoing reporting requirements

Standard	What the Standard says
6.1	Disclosure of valuation policy document to investors
6.2	Disclosure of portfolio manager involvement in valuation process
8.1	% percentage of portfolio in “liquidity” buckets
8.2	Investor notification of material increases in hard-to-value assets
8.3	Periodic reporting of value of side pockets
8.4	Disclosure of other material issues to investors

The *governance* arrangements provide an overarching framework to establish and manage the valuation process with a view to ensuring fair treatment of investors. Most valuation challenges arise in the context of hard to value assets, and the Alternative Investment Standards seek to establish a *reliable approach* for dealing with hard to value assets. The *investor disclosure* requirements ensure that investors can make well informed judgements about the valuation process as well as the ongoing valuation of assets.

The Valuation Policy Document

An important disclosure is the manager’s Valuation Policy Document to investors[6], which should be the starting point of an investor’s due diligence of the valuation framework.

Standard 6.1 Valuation Policy Document

A document (a “Valuation Policy Document”) covering all material aspects of the valuation process and valuation procedures and controls in respect of the fund should be prepared. The Valuation Policy Document (which it is acknowledged will contain information which is proprietary to the fund manager) should be reviewed regularly by the fund manager, in consultation with the fund governing body, and be made available to investors upon request on a confidential basis.

The SBAI envisages that in most circumstances the Valuation Policy Document will describe:

- the responsibilities of each of the parties involved in the valuation process;
- the processes and procedures in place that are designed to ensure that conflicts of interest are managed effectively;
- the relevant material provisions of any service level agreements (SLAs) entered into with third parties responsible for or involved in the valuation process (excluding details of commercial aspects of any such SLAs); and
- the controls and monitoring processes in place that are designed to ensure that the performance of any third party to whom the valuation function is outsourced is satisfactory.

(…)

Source: Alternative Investment Standards, Valuations (https://www.sbai.org/standards/)

[6] Disclosure upon request on a confidential basis (since Valuation Policy Documents can contain sensitive intellectual capital about the manager’s procedures, models, etc. and can be seen a competitive differentiator)

Specific valuation issues for ILS Funds

Large catastrophic events are often complex and the ultimate insurance related losses may not be known for a considerable period after such an event, potentially resulting in material valuation uncertainty over an extended period. The valuation required is a single number, but this number is often the summary of a wide range of potential outcomes.

As there is no secondary market in most types of insurance exposures written by ILS Funds, managers are required to derive their own valuations (although third-party valuation firms may be utilised to various degrees in the valuation process). One exception is the catastrophe bond market[7], for which a secondary market does exist and third-party pricing indications are available at most times from brokers (although in times of stress the bid/ask spread may be very wide).

In the absence of losses to a (re)insurance contract, many managers will price the contract by recognizing the contract premium over the risk period of the contract commensurate with the dissipation of the underlying catastrophe event risk. In situations where a loss event has occurred, valuations by the fund manager will generally involve estimating the total potential losses to the contracts exposed to that event. This is likely to require qualitative and quantitative inputs which may vary by event, by cedant[8] and over time, including:

- Mark-to-model (based on characteristics of the event)
- Industry loss estimates disseminated by modelling companies or other sources
- Market share analysis
- Claims and loss reserve reporting, and
- Ultimate loss estimates provided by cedants

While it is clearly desirable to have "accurate" valuations quickly after a loss event, actual loss information will materialise over time as insurance claims are reported, adjusted and settled. The illustration below shows generally what information is available during the different stages before and following an event (before the final determination of the ultimate loss).

Illustration: Stages of valuation (pre-ultimate loss determination)

Source: Milliman

In practice, the loss estimation, and thus valuation, can change materially over time as shown below, complicating the process of obtaining a "fair value".

[7] A form of collateralised (re)insurance – see Appendix A

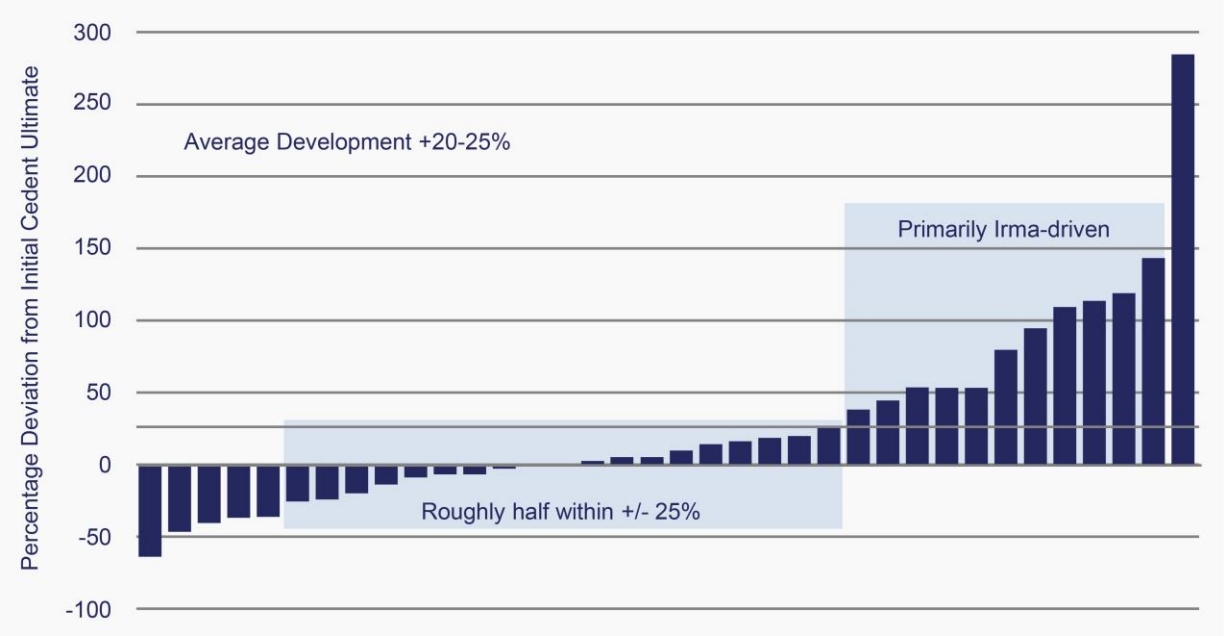
[8] A cedant is a party that buys insurance cover from and pays a premium to a fund or (re)insurer.

Dispersion of loss estimates

Managers generally seek to use the best possible estimate of the ultimate loss to a contract that is available to them when determining fair value. As mentioned above, there are various methods a manager may use in the estimation of ultimate loss, but at some point in time, the manager will generally rely, at least to some degree, on loss estimates reported by cedants. Currently, however, there is no uniform way in which cedants report their loss estimates to manager and the frequency and quality of loss estimation and reporting can vary significantly (including differing levels of responsiveness of cedants to inquiries by managers)[9]. Furthermore, loss estimates are subject to revision by cedants over time as more information becomes available regarding the extent of losses from an event. The dispersion across the industry between cedants' loss estimates over time and differences in managers' level of diligence in seeking out and analysing loss information, can result in material changes in estimates of ultimate loss by managers over time, as well as material differences in the same estimate of ultimate loss between managers.

The analysis below shows the deviation of ultimate loss estimates from cedants' initial estimates for Hurricanes Harvey, Irma and Maria (HIM) in 2017.

Changes from initial to ultimate loss for 40 representative cedants



Source: Milliman

Differences in valuation approach

The dispersion of valuations can be further affected by fund managers applying different methods/approaches or inputs when valuing their portfolios. For example, a manager utilising a cedant's reported loss estimate may come up with a different valuation from a manager utilising a market share approach. Or, a manager may make an adjustment to a cedant's reported loss estimate resulting in a different valuation than a manager that does not. Further, there are several different commercial catastrophe model vendors each with their own view of risk, which may result in a different estimation of loss and different valuation, for a given event depending on the model chosen, all else equal. The lack of

[9] Reasons given include restrictions publicly listed cedants might face regarding public disclosure of material information

a standard approach and the variability of the inputs to any approach make it even more important that investors understand the valuation process employed by the manager.

Side-pockets and other mechanisms to reduce unintentional value transfers between investors

The above discussion illustrates why a point estimate of value may have a wide range of uncertainty around it for some time after a large event. Investors in open-ended ILS Funds are likely to regard it as unsatisfactory to use such an estimate for determining the share of new subscriptions in the fund or the price at which redeeming investors can exit. Consequently, various forms of side-pocketing are widely used by managers of open-ended ILS Funds when either new subscriptions are to be received or redemptions requests have been received after a loss event. The intention is to isolate the source of valuation uncertainty to be held by existing investors at the time of the event and which cannot be redeemed until the valuation uncertainty is resolved. ILS Funds will generally segregate side-pocketed assets through the creation of a separate share class or series to track the value and ownership of such assets separately from the main portfolio for existing fund investors. Such side-pocketed assets or side-pocket share classes may be described as "Designated Investments" or "Development Share Classes" or by some other specific designation. The concept of side-pocketing in open-ended ILS Funds after the occurrence of a loss event is generally viewed favourably by investors.

There are various methods employed for the structuring of side-pockets and the reporting of their performance.[10] Offering Memoranda may disclose in varying degree of detail the fee structures and decision-making processes involved, but more information may be disclosed by the manager upon investor request. **SBAI intends to publish a separate Toolbox memo on utilisation of side-pockets by ILS Funds, examining current practice and issues for investors to consider.**

Key questions for investors in ILS Funds to ask

Given the additional issues that can arise in the valuation process for collateralised reinsurance-linked funds, this section focusses on the key questions investors need to ask when assessing an ILS Fund manager's Valuation Policy Document and overall approach to valuation.

Governance

- Is the manager a signatory to the SBAI's Alternative investment Standards?
- **If yes, investors should request the manager's Disclosure Statement in relation to the Standards. Investors can then review any "explanations" the manager might have in relation to the Standards**
- Who reviews and approves valuations?
- If there is a Valuation Committee:
  - Who participates in the Valuation Committee?
  - How frequently does it meet?
  - Are Valuation Committee Meeting Minutes provided to the Board of Directors for review? If not, what role does the Board of the Fund play? What information is provided to it?
- What level of independence is there in oversight of the valuation process? (i.e. external independent participation in the Valuation Committee, independent valuation reviews at critical dates (e.g. bi-annual review by actuarial firm), majority independent non-executive directors on the Board of the Fund?)
- Is there an auditable trail in the valuation process?

[10] The Alternative Investment Standards cover side-pocketing practices, see Standards 7.2

Process for valuing collateralised reinsurance investments

- Is there a Valuation Policy document that specifically discusses the valuation methodologies and /or process for collateralised (re)insurance investments?
  SBAI Signatories who comply with Standard 6.1 will make the Valuation Policy Document available to investors upon request on a confidential basis
- How are valuation methodologies implemented and the outcomes approved?
- Does the manager have a process for capturing the occurrence of, and material information about, catastrophe events to which the investments may be exposed so as to evaluate the fair value impact of these events?
  - What methodologies does the manager employ to value such investments? (e.g. mark-to-model processes, market share analysis of industry losses, overlay of cedant loss reserve advise, actuarial procedures)
  - Who is responsible for calculating the valuations? What are the controls in place to ensure accuracy?
  - How is loss information obtained from cedants? With what frequency?
  - Does the fund engage an external party in the valuation process? To what extent? (e.g. Independent valuation versus “reasonableness” check)
  - Are inputs into the valuations recorded, and can they be audited by external parties?
  - To what extent does the manager rely on incurred claims reported by cedants for valuations and what procedures if any are used to develop incurred claims to ultimate losses?
  - To what extent, if at all, does the manager account for Incurred But Not Reported (“IBNR”) losses?
- Use of modelling:
  - How is catastrophe modelling utilized in the valuation process?
  - Which models are utilised? What are the inputs or assumptions?
  - Are models used in the revaluation of a contract? If so, what would trigger such revaluation?
- Income recognition:
  - Are risk dissipation profiles (for seasonality of risk, contract structure or otherwise) used to recognize premiums?
  - What is the process for creating profiles and what are the controls?
  - When are they generated, and when might they be revised?
  - Are the earnings profiles adjusted during the contract period in the case of a loss event? If so, how?
  - Does an administrator or other third-party play a role in calculating or verifying premium earnings?
  - How are Additional Premiums, Reinstatement Premiums and Premium Adjustments dealt with?
- Loss estimation: For a given event, what are the procedures used to capture loss estimates for all potentially affected positions, irrespective of whether the cedant has provided any advice?

Investor disclosure

- Are investors informed about the impact on the fund from events that have occurred prior to the reporting period? What information is provided?
- What information is provided regarding loss development over time and the effect on performance?
- Do the reported returns for the fund include all loss-affected positions?

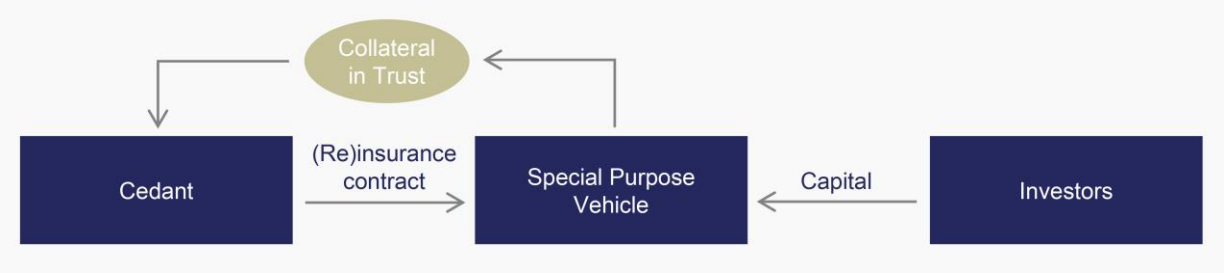
- Does the Administrator produce Administrator Transparency Reports (ATRs) that include verification of existence of assets and contracts, percentage of assets independently valued by the administrator or other third-party-parties, and classification of assets and/or liabilities by Level? How are assets in trusts classified?

Appendix A

How does collateralised re-insurance work

Collateralised re-insurance facilitates the transfer of insurance risk (and return streams) into capital markets (i.e. institutional and retail investor portfolios). The underlying (re)insurance contract is between the cedant and a special purpose Insurance vehicle ("SPV"), and the key differentiating feature from traditional (re)insurance is that the obligations of the SPV to the cedant are collateralised by assets held in a trust. These assets are typically invested in near risk-free assets (e.g. government bonds, providing money market returns), and the collateral at any time during the exposure period of the contract is equal to the (remaining) contract limit.

Illustration: Structure of a collateralised (re)insurance transaction



The assets in the trust come from a combination of the premiums paid to the SPV by the cedant and capital provided to the SPV by the ILS Fund or by other types of investor. In a catastrophe bond structure, the SPV issues bonds to the fund or investor in return for cash that is placed in the trust. In more general collateralised (re)insurance structures, the SPV may issue short-term preference shares in exchange for cash, or even be provided with the necessary cash under a swap agreement with the fund or investor.

If no losses occur, the collateral in the trust is returned to the fund or investor (who may also receive coupons over time in the case of a multi-year catastrophe bond). If an insurance event occurs that results in a loss to the underlying contract, part or all of the collateral will be transferred to the cedant. At maturity (or a later point in time, as losses are finalised), there is a return to the fund or investor of remaining assets in the trust.

Appendix B
Valuation of ILS instrument types by liquidity

Type of instrument/structure	Pricing approaches
Tradable instruments: Cat Bonds	• Pricing sheets from brokers (not necessarily based on observable trades) • Secondary market prices/past transactions (as markets not particularly deep, usually not enough price data points to use as firm basis for valuation) • Broker quotes
Private Contracts: ILWs, private cat bonds, Collateralised Insurance, Reinsurance, Retrocession, and Quota Shares	• Broker quotes (for ILWs and private cat bonds) • Manager-estimated pricing.; more often this is based on mark-to-model, allocation of insurance industry loss estimates by market share analysis, broker estimates and, ultimately, counterparty loss and loss reserve advices, which albeit themselves are based on actuarial inputs and the manager's analysis thereof, or internal modelling

Appendix C
SBAI ILS Working Group members

Name	Organisation
Jennifer Lau, Helen Rexwinkel	Aberdeen Standard Investments
Jack Davies, Michael Hamer	Albourne Partners
Aleksander Weiler	CPPIB
Mike France	Elementum Advisors
Craig Dandurand	Future Fund
Richard Lowther, Matthew Swan, Adriaan Van der Merwe	Hiscox Re-insurance Linked Strategies
Tim Shreeve	Nephila Capital
Eveline Takken-Somers	PGGM
Juan Prado	PIMCO
Kataryna Diesen, Kai Rimpi	Varma