

Illiquid Assets – Key considerations for general insurance investors

October 2013

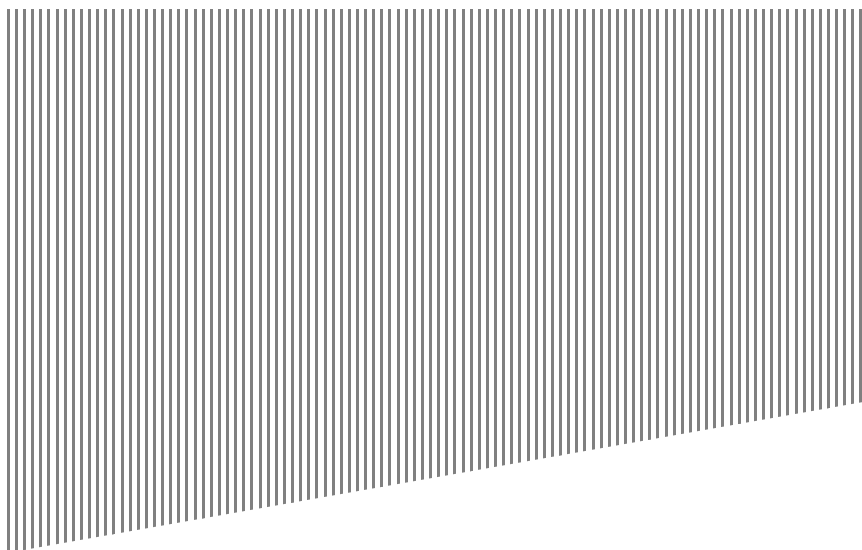


Institute
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Agenda

- Illiquid assets – the opportunity
- Addressing the challenges
 - Managing liquidity
 - Modelling illiquid assets
- Discussion

Illiquid assets – the opportunity



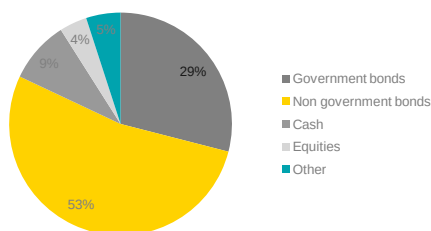
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Current investment strategies

- ▶ The following table shows an average return on investment for the last 5 years for 3 major insurers:

2008	2009	2010	2011	2012
-1.4%	5.9%	2.8%	3.2%	2.9%

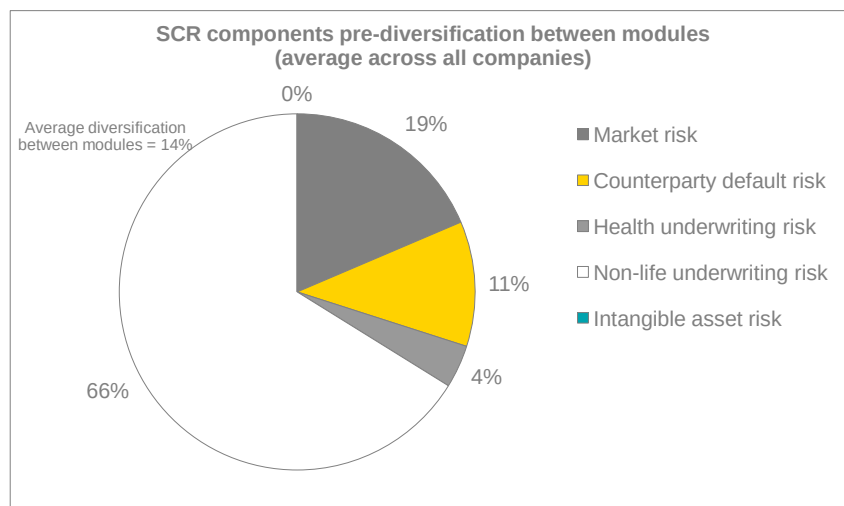
- ▶ Investment strategies are seen to be conservative, erring on the cautious side of the risk to return relationship given the ongoing uncertainty in financial markets.
- ▶ Asset allocations tend to be highly focused on fixed income investments and cash as can be seen in the following breakdown of a major insurer:



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QIS5 results

BSCR components

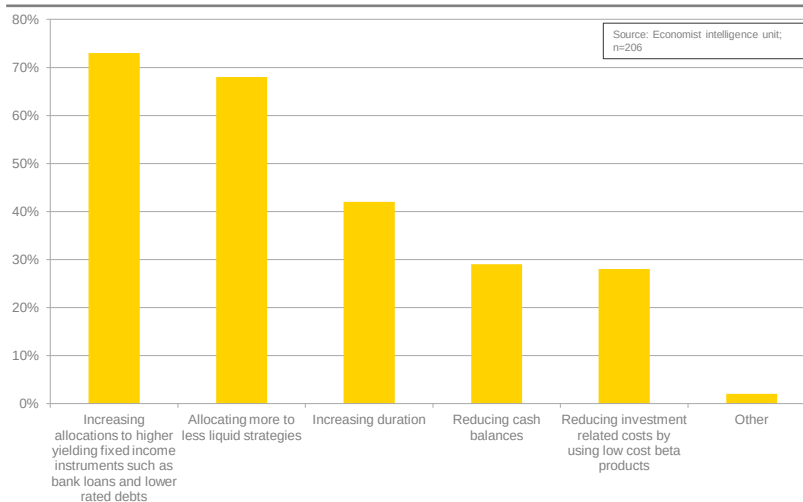


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Responding to the challenge of low interest rates



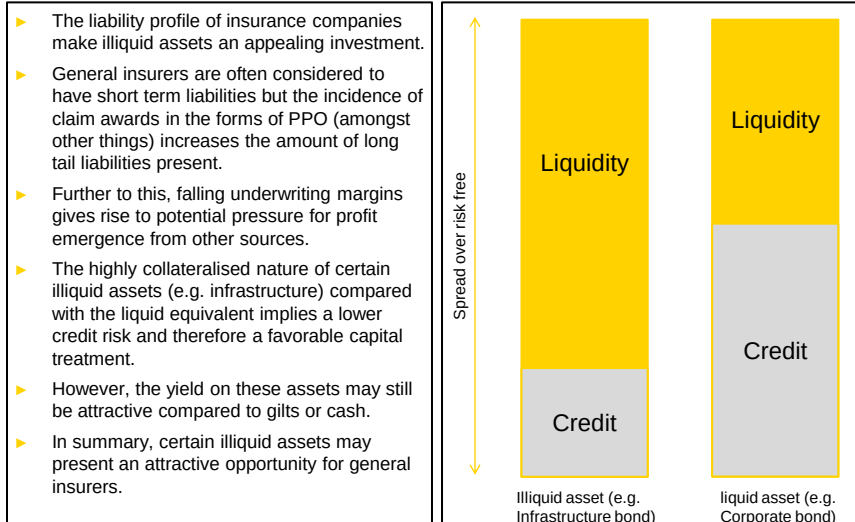
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The Illiquid Asset Market

The Economic Opportunity - Overview



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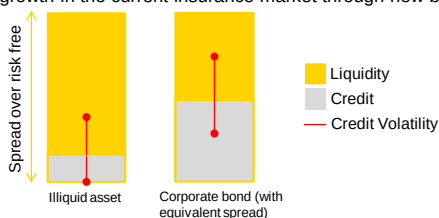
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The Illiquid Asset Market

The Economic Opportunity – The Current Market

- ▶ In the current market insurers are exploring opportunities to generate additional income, reduce capital and/or increase IFRS earnings from their existing investment portfolio by making their high-quality assets (which they have in abundance) available to others. This is driven by:
 - ▶ The implementation of central clearing which has increased the demand for high quality liquid assets.
 - ▶ The lack of available growth in the current insurance market through new business.



- ▶ Many illiquid assets (e.g. Infrastructure bonds) carry low credit risk as the sponsor is either a stable government or a government-backed agency. However, the complex nature and illiquid market of these assets lead to their return being >2% over risk free.
- ▶ Banks are experiencing an increased need for high quality liquid assets to meet funding costs creating an opportunity for insurers to acquire illiquid assets at a spread higher than that implied by the credit risk.

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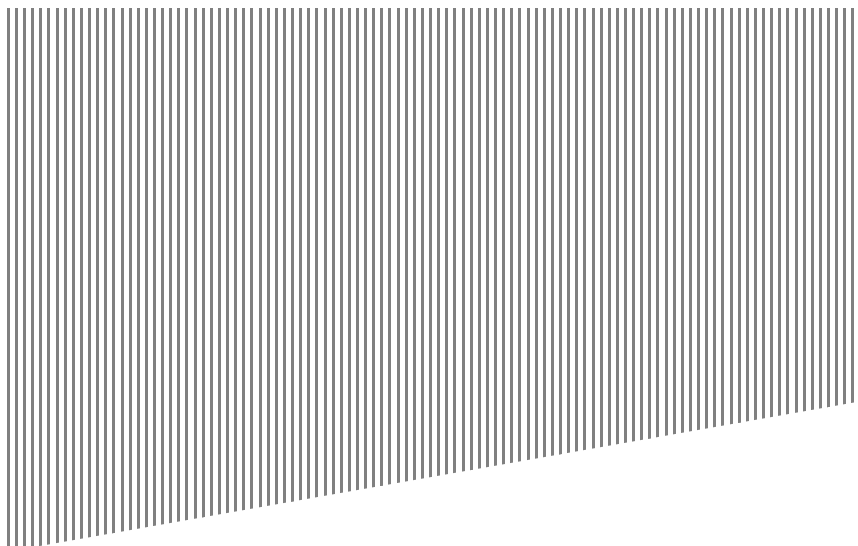
The Illiquid Asset Market

The Economic Opportunity

Assets	Typical UK Spread (BPs)	Key Features
Commercial mortgages	>300	► Require specialist skills to enter market ► High yield but relatively high default ► Immediate actions from the lenders in the event of foreclosures from borrowers
Infrastructure financing	>200	► Low default because of implicit government support for PFI; non-PFI has higher spread
Social housing	>150	► Low default because of implicit government support
Asset-backed securities	>250	► Create diverse pools of underlying assets ► Varying default risk and characteristics depending on asset.
Covered bonds	>100	► Collateral replaced by issuing institution and high quality
Liquidity swaps	50 – 100	► Indirect investments in overcollateralised illiquid assets
Student accommodation	>150	► Low default because of implicit government support
Solar bonds	>250	► Sometimes with explicit government guaranteed streams

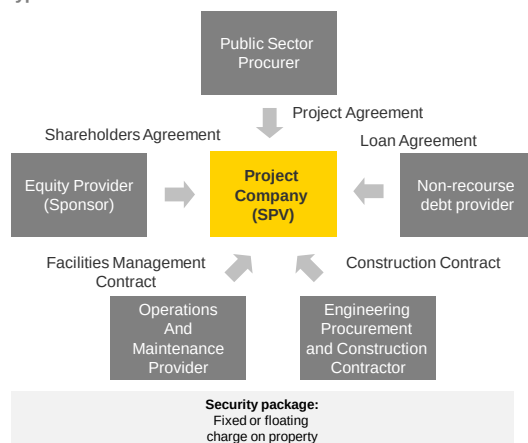
- For reference the spread on AAA-A UK corporate bonds is 50-150bps
- The above asset classes may track narrower than this. These spreads are levels at which we believe the assets are interesting.
- Many asset types depend to a degree on government support or subsidy. It is interesting to consider the *relative* safety of the different asset types with regard to the risk of removal of subsidy. Generally social housing related assets are likely to be lowest risk and more niche assets such as solar higher risk. In all cases there is very little default data.

Addressing the challenges

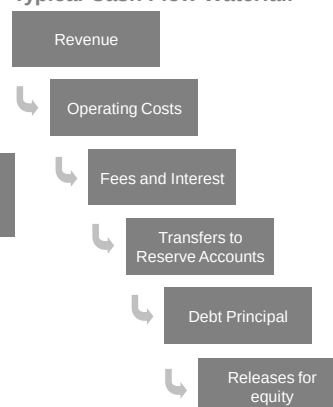


Sample asset type – Infrastructure

Typical PPP/PFI Contractual Structure



Typical Cash Flow Waterfall

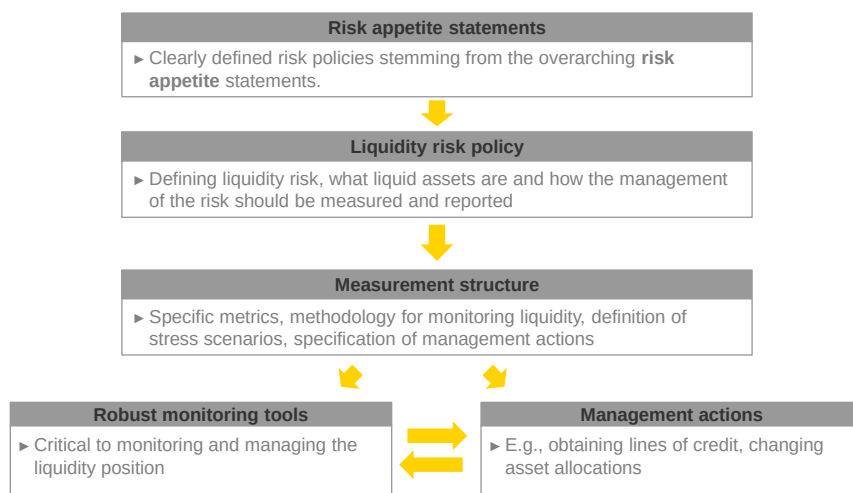


Challenges for insurance investment

By their nature, illiquid assets are often more complex than liquid counterparts.

- ▶ Particular challenges for insurers include:
 - ▶ Sourcing appropriate investments or managing the relationship with a third party asset manager
 - ▶ Evaluating the attractiveness of such investments and determining an appropriate metric to use for evaluation
 - ▶ Valuing such investments
 - ▶ Determining capital treatment
 - ▶ Ongoing management of the illiquid asset portfolio
- ▶ Typically, a company will need to invest in new infrastructure (systems and tools) as well as processes (challenge mechanisms and decision mechanisms) to both assess the opportunity at outset and to monitor the opportunity.
- ▶ These assets can be sold back in the secondary market (currently) but typically would trade at a significant discount to “economic value”.
- ▶ It is also possible that in a poor scenario, the assets would not be tradeable.
- ▶ Whilst there is opportunity in “selling” liquidity to the market, a company needs to understand its liquidity position before embarking on such a strategy.

Liquidity management - good practice

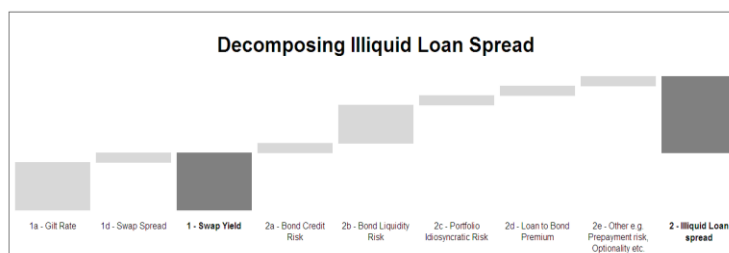


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Methodology Overview

Loan Example



Typical illiquid asset loan spread decomposition

- The Gilt rate is further decomposed into principle components and combined with the Swap Spread to give the Swap Yield.
- The spread over swaps of the illiquid loan is decomposed into the following:
 - 2a. Bond Credit Spread – the typical credit spread of a bond issued by the same class of body issuing the loans
 - 2b. Bond Liquidity Spread – the typical liquidity spread of a bond issued by the same class of body issuing the loans (
 - 2c. Portfolio Idiosyncratic Risk – The additional spread caused by differences in between a typical loan available in the market and the ones in the portfolio
 - 2d. Loan to Bond Premium – The additional liquidity expected on a loan issued by a body rather than a bond issued by the same body
 - 2e. Other e.g. Prepayment risk, Optionality etc. – The additional spread caused by any additional risk factors.

Risk Factor Decomposition Of Illiquid Assets

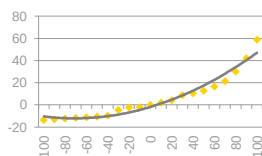
The typical risk factors for an illiquid asset are:

- Interest Rate Components
- Spread components (Typically credit and liquidity)

For risk factor the following need to be derived:

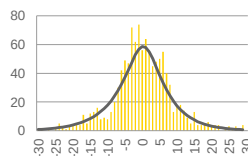
Loss Functions

For each Risk Factor, a function describes the change in value from changes in the risk factor



Probability Distribution

For each Risk Factor, a PDF describing the probability of changes in the factor



Correlation

Matrix describing correlation of each Risk Factor with all other Risk Factors



As modelling interest rate components is already a familiar tasks for insurers, the next slides will focus on modelling the spread components.

Methodology Overview

- A robust methodology is defined to ensure an easy application across different illiquid asset classes.
- Risk factors driving the illiquid asset spread are identified, e.g. Credit and liquidity spread.
- As a result, we estimate **Market** Credit and Liquidity Factors which need to be transformed into **Specific** factors for the illiquid asset
- An idiosyncratic adjustment must then be made to reflect the difference in riskiness relative to the illiquid asset market. One way of making this adjustment is by using a scorecard based on asset features to assign a credit score to the individual assets and then using a formula fitted with a regression on historic data to adjust the spread

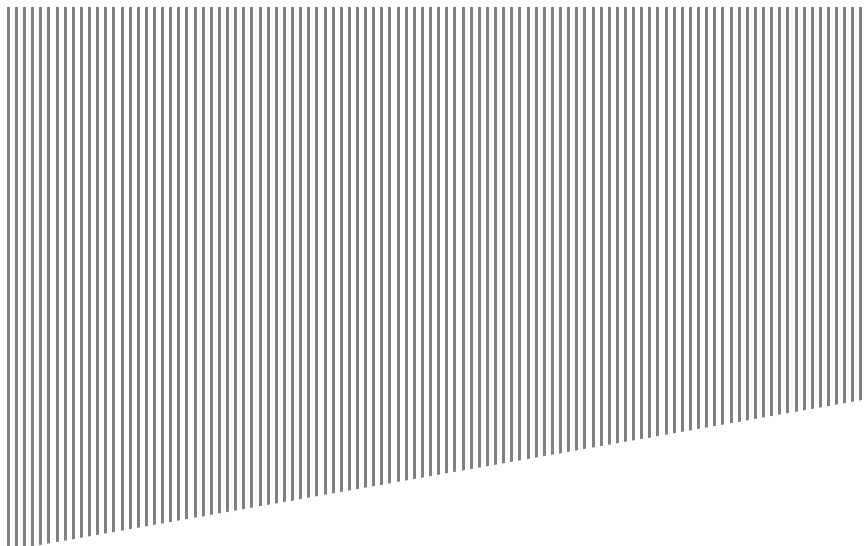


*In this example we assume that the illiquid asset spread decomposes into two factors (credit and liquidity). However, this approach can be generalised to multiple risk factors.

Calibration of credit and liquidity bond spread

- ▶ **1. Identify the market indices:** The aim is to identify two indices which are representative of market credit and liquidity considering:
 - ▶ Market relevance
 - ▶ Availability
 - ▶ Correlation with the illiquid asset spread.
- ▶ These will then be used as a proxy for the credit and liquidity spread movements in the illiquid asset spread.
- ▶ **2. Calibrate the market distribution:** Potential methods being methods of moments, MLE's, least squares etc.
- ▶ **3. Calculate the central tendency:** This is calculated differently dependent on what the risk factor is e.g. credit or liquidity
- ▶ **4. Transform the market distribution:**
 - ▶ After the market and credit indices have been identified a distribution is calibrated to the movements in these indices.
 - ▶ A scaling is then applied to the market distributions to align their central tendency with the spread factor central tendency.

Questions?



Thank you

