Investment in insurance-linked securities
Valuation and modeling approaches for European insurers under Solvency II
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Recent market conditions, especially the low-yield environment, have made adding value through standard “vanilla” assets less attractive for insurers. As a result, insurers are exploring other investment opportunities. One option is for insurers to sell the high-quality liquid assets they generally hold in abundance and invest in illiquid assets. The resulting cash flows provide a close match to the liability cash flows while providing higher risk-adjusted returns.

One illiquid asset class being considered is insurance-linked securities (ILS). While a number of ILS may be worthy of consideration, the largest such asset class (by notional outstanding) is life settlements. Life settlements are US life insurance policies where the policyholder has chosen to sell its policy to a third party rather than accepting the surrender value. Life settlements provides a natural investment opportunity for an insurer given that most insurers have the expertise to understand the key risks – most notably, longevity risk.

With full Solvency II implementation expected on 1 January 2016 and with “dry runs” and “Solvency II-like” assessments being performed by companies and regulators in the interim, the treatment of assets under Solvency II remains important for European insurers now.

This publication considers how life settlements assets may be treated under Solvency II and discusses the economics of the asset class. Note, however, that the concepts considered here are broadly applicable to other ILS investments.

Furthermore, there are considerations beyond the scope of this document which an investor should investigate and consider, such as:

- Approval from host regulators for investment and its Solvency II (partial) internal model calibration thereof.
- The risks associated with the possible changing future US regulatory environment.
- The management of any currency mismatching.
- The fund structure.
- The provider’s track record.
If an insurer can structure its life settlements holding so that it can be treated as a negative liability under Solvency II rather than an asset, then under this regime it would be expected to:

- Improve its solvency position.
- Recognize a day one release of free assets not normally achieved with “typical” insurance company investments.
- Avoid any matching adjustment considerations. Such considerations may be relevant should the holding be structured as an asset.

The key reason for the benefits above is that internal rates of returns, relating the purchase price to the expected cashflows for life settlements assets, are usually in excess of 10%. This internal rate of return is significantly higher than an (adjusted) risk-free rate applied to a Solvency II balance sheet.

Not surprisingly, protection providers receive the greatest day one release of free assets from life settlements investment because such insurers experience diversification benefits from taking incremental longevity risk exposure.

Note that, to reap benefits from investing in life settlements under Solvency II, an insurer does not necessarily need to be pursuing a Solvency II (partial) internal model, although an insurance company with a Solvency II (partial) internal model may receive greater relative benefit depending on its calibration approach.
Our analysis

For this publication, we have considered the impact of switching 10% of assets from gilts into life settlements for a generic protection provider and a generic annuity provider.

There are a range of possible approaches to modeling life settlements, and the ultimate treatment will depend on the final Solvency II regulations, the insurer’s own assessment of the risks and the precise structure of the investment.

We have considered three possible approaches to the treatment of life settlements investment under the likely Solvency II framework:

1. Use of the Solvency II “standard formula” treating the investment as an asset and applying the Solvency II “type 2 equity” stress\(^1\) only – denoted “SFA”
2. Use of standard formula treating the investment as a negative liability – denoted “SFL”
3. Use of a “partial internal model” treating the investment as a negative liability, but with a non-standard formula longevity stress – denoted “PIM”

For SFL and PIM, we assume the insurer is investing directly in life settlements policies and, as a result, the investment can be treated as a negative liability. In order for a negative liability approach to work under Solvency II, it appears that the life settlements holding must be structured so that the insurer “looks through” or gains direct individual exposure to the performance of the underlying policies. Many life settlements funds would be subject to liquidity calls from other investors which would lead to the insurer having additional exposure to liquidity risk within the fund. The two main ways to gain direct individual exposure are: (i) the insurance company holds the life settlements policies directly, or (ii) investing in a segregated mandate which is structured such that both the fund liquidity facility is a call on the cash of its investors and no redemptions are possible within the fund. For brevity, we consider only (i) in this publication.

For the avoidance of doubt, for SFA, the insurer is not investing directly in life settlements – for example, purchasing shares in a fund in the usual way where the liquidity calls on the fund are met by cash and funding generated by the fund.

Solvency II balance sheet impacts

For both of the case studies we have considered – a protection provider and an annuity provider – the insurer is assumed to switch 10% of its total assets out of gilts and in to life settlements. The following subsections show the impact on the protection and annuity business from investing in life settlements.

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Figure 1 shows the solvency ratio and day one release of free assets for a notional protection provider as a result of investing in life settlements.

<table>
<thead>
<tr>
<th></th>
<th>With no life settlements investment</th>
<th>With 10% of asset investment in life settlements (in place of gilts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>BEL</td>
<td>21.3</td>
<td>3.8</td>
</tr>
<tr>
<td>RM</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Available capital (own funds)</td>
<td>78.7</td>
<td>86.2</td>
</tr>
<tr>
<td>SCR</td>
<td>50.5</td>
<td>51.4</td>
</tr>
<tr>
<td>Free assets</td>
<td>28.3</td>
<td>34.8</td>
</tr>
<tr>
<td>Solvency ratio</td>
<td>156%</td>
<td>168%</td>
</tr>
<tr>
<td>Day one release of free assets</td>
<td>0.0</td>
<td>6.5</td>
</tr>
</tbody>
</table>

The risk margin is shown as zero in Figure 1 because in our analysis the margin is small and changes little following investment in life settlements.

Figure 2 shows the solvency ratio and day one release of free assets for a notional annuity provider as a result of investing in life settlements.

<table>
<thead>
<tr>
<th></th>
<th>With no life settlements investment</th>
<th>With 10% of asset investment in life settlements (in place of gilts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>BEL</td>
<td>56.0</td>
<td>38.5</td>
</tr>
<tr>
<td>RM</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Available capital (own funds)</td>
<td>42.5</td>
<td>50.1</td>
</tr>
<tr>
<td>SCR</td>
<td>27.2</td>
<td>28.2</td>
</tr>
<tr>
<td>Free assets</td>
<td>15.2</td>
<td>21.8</td>
</tr>
<tr>
<td>Solvency ratio</td>
<td>156%</td>
<td>178%</td>
</tr>
<tr>
<td>Day one release of free assets</td>
<td>0.0</td>
<td>6.7</td>
</tr>
</tbody>
</table>
Observations on results

- Treatment is understandably penal for SFA given a 42% “type 2 equity” stress on the market value of the life settlements holding. This is true for both protection and annuity business.
- Investment in life settlements as a negative liability is beneficial for protection and annuity providers with day one release of free assets of approximately 70% of the value of the investment. The reduction in the best estimate liabilities is significantly higher than the (market) value of the asset, given that the assumed market discount rate of 12% for valuing the asset is set well above the Solvency II risk-free discount rate curve. This reduction is offset to an extent by an additional longevity stress.
- Impacts from moving to a partial internal model are:
  - A slightly reduced impact from longevity stress
  - The addition of penal operational risk stress
This leads to the overall position being slightly worse using a partial internal model. This appears appropriate given the operational risk is not captured in the standard formula.
- The “National Competent Authority” (regulator for local company) may require a (partial) internal model to capture the full risk profile of the investment (e.g., operational risk).
- The key difference between treatment for protection providers and annuity providers when life settlements are treated as a negative liability is the diversification benefit for the protection provider between longevity and mortality risk.
- In our examples, treating the life settlements as an asset means that the balance sheet position is worsened more for annuity providers than protection providers because the investment introduces additional market risk to which the annuity company is already more heavily exposed.
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