Managing a Matching Adjustment Portfolio

Insights from an insurance asset manager

Standard Life Investments

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Introduction

The Solvency II Directive codifies and harmonises EU insurance regulation. The directive, in force since 1 January 2016, relates primarily to the amount of capital insurers within the EU must hold in order to reduce insolvency risk. The purpose of this paper will be to examine, from an investment manager's perspective, how EU insurers can use Solvency II's Matching Adjustment (MA) provisions. The MA provides insurers with a capital efficient mechanism for holding eligible long-term assets to match eligible life or annuity insurance obligations.

Strict criteria apply to the eligibility of assets and liabilities with regard to the MA, including:

- insurers must be able to hold the relevant assets to maturity
- cashflows from the assets and liabilities must be matched
- assets should only be replaced in order to retain matching in the event of a material change in expected cashflows

Already within the UK, a number of insurers have successfully applied to the Prudential Regulation Authority (PRA) to use the MA. This paper explores how European insurers can seek to manage their MA portfolios, including the options available in cashflow matching optimisation, the use of private debt with internal credit ratings, and implementing bespoke buy-and-maintain credit mandates.

We will also show how it is possible for an asset manager to meet these complex operational requirements which are now an essential part of managing MA portfolios for insurers.

Background

What is the 'Matching Adjustment'?

The MA is an adjustment to the regulatory discount rate, allowing insurers to incorporate an allowance for the illiquidity of their assets into the valuation of certain liabilities e.g. their annuity business. The rationale is that where insurers can hold these assets to maturity, they can earn an illiquidity premium on those assets and are no longer being exposed to the risk of changes in credit spreads on those assets - they are only exposed to changes in the risk of credit loss on the assets.

Why are illiquid assets attractive?

Insurance companies are increasingly taking advantage of their long-term liabilities to invest in illiquid private debt, such as commercial real estate debt and infrastructure debt. The benefits of this investment for insurers can include additional return ('illiquidity premium') and increased diversification of credit exposures, by both borrower and sector. This may benefit all of an insurer's stakeholders, including customers and shareholders, as well as the issuers of the illiquid debt that the MA is designed to encourage insurers to invest in.

What approvals are required to use the MA?

The MA is subject to regulatory approval. Within the UK, the PRA ran a pre-application process for those insurers intending to use the MA. Throughout that process, the PRA provided feedback across a number of areas, such as portfolio management, the use of internal credit ratings, collateral management, liquidity plans and asset eligibility. They also set out quantitative standards in respect of the quality of cashflow matching and assessing the materiality of interest rate mismatches.

What are the benefits of MA?

The capital benefits of a successful MA application are significant, through reduced technical provisions **(a 10% relative reduction in an insurer's annuity liabilities could be achieved)**. Further capital benefit could be achieved through reduced capital requirements in respect of spread risk which could be reduced by 25-55% for insurers using the standard formula. This capital benefit will be of particular value to those firms intending to remain active in bulk buy out and individual annuity markets as the insurer will not be able to benefit from any transitional arrangements for business written from 1 January 2016.

What stress testing is required on the MA?

Insurers must remain aware of the impact on their balance sheet of not using the MA. This impact must be reported annually and, should this result in the firm not complying with the Solvency Capital Requirement, the regulator will expect "an analysis of the measures it could apply in such a situation to re-establish the level of eligible own funds covering the Solvency Capital Requirement or to reduce its risk profile to restore compliance with the Solvency Capital Requirement."

Previous Insight paper

This document follows our previous Investment Insight paper, 'Optimal Matching Adjustment - How to construct an optimal matching adjustment asset portfolio under Solvency II' published in February 2015.

In the February paper, we discussed some of the operational challenges associated with the MA, together with the key considerations for insurers in constructing an optimal MA asset portfolio. These challenges included defining the cashflow matching approach and the permitted tolerances around the matched position.

Since February 2015, a number of UK insurers have been successful in their applications to the PRA to use an MA. As a result, we have seen in practice how insurers have met these operational challenges and we have shared these insights in this paper.

Investment of an MA portfolio

The 'prudent person principle' (PPP) defines how insurers should invest under Solvency II. Under the PPP, insurer's assets are "invested in such a manner as to ensure the security, quality, liquidity and profitability of the portfolio as a whole". Further, assets backing technical provisions should be "appropriate to the nature and duration of the [...] liabilities".

Given the PPP requirements, and the MA qualifying criteria, a natural starting point for an insurer's MA asset strategy could be to construct a 'buy and maintain' portfolio of bonds. The insurer may then look to maximise the MA excess return, subject to meeting the cashflow matching tolerances and other constraints. This approach is described in detail in the previous Investment Insight paper published in February 2015.

Chart 1 below shows such a portfolio comprising investment grade corporate bonds ('Portfolio 1'), which have been broadly cashflow matched to a sample portfolio of in-payment annuities.

We will now explore several key considerations for investment managers running these portfolios, specifically:

- assessing the quality of cashflow matching
- impact on the investment process
- use of internal credit ratings

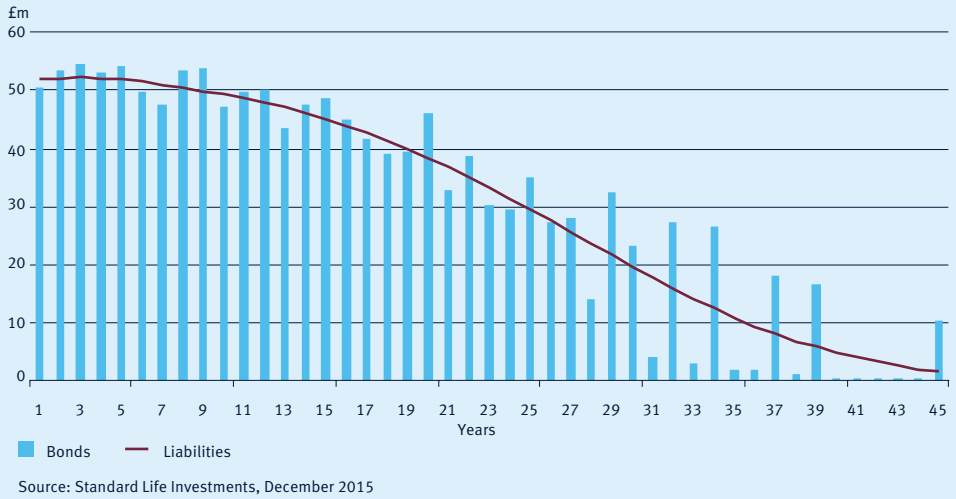
Cashflow matching assessment

Within an MA portfolio, the expected asset cashflows (after allowing for the probability of default) and liabilities should be matched. There is also a requirement that any residual mismatch (rates, inflation, and currency) does not give rise to material risk on the balance sheet.

Within the UK, the PRA have set out three tests they expect insurers to pass in respect of their MA portfolios or, if not, explain the rationale for non-compliance. These tests seek to assess compliance with the key matching requirements and so are relevant considerations for European insurers outside of the UK.

1. The first of these tests ('forced seller test') operates in a similar manner to the approach detailed in our previous Investment Insight paper, based on a one-sided (rather than two-sided) constraint. That is, the maximum net cashflow shortfall must not exceed a defined threshold.

Chart 1: Annual Cashflow Matching



Source: Standard Life Investments, December 2015

2. The second of the PRA tests ('VaR test') assesses the risk arising from any residual mismatches. It requires insurers to assess the 99.5th percentile 1-year value at risk (VaR) arising from the MA portfolio for rates, inflation and currency. The resulting exposures must not exceed defined thresholds.
3. The final of the PRA tests ('notional swap test') ensures that sufficient cashflows have been allocated to the MA portfolio to meet the liabilities in aggregate. It also ensures that the firms are not using an MA calculated from too few assets, which could result in firms overstating the benefit of the MA.

It is important to note that the insurer remains responsible for their matching process and assessing the quality of the resulting cashflow match within their MA portfolio. The PRA tests are not the only measures that may be appropriate and, indeed, passing the PRA tests would not automatically result in what the insurer may consider to be a well matched position.

The insurer must also provide a "liquidity plan projecting the incoming and outgoing cashflows in relation to the assets and liabilities" within their MA portfolios. This projection is likely to be similar to the approach adopted for the 'forced seller test', allowing for any further sources of liquidity within the MA portfolio and, potentially, the insurer's views on expected credit losses. Further projections may also be carried out at different levels of granularity, over different time periods, and in a range of stress conditions. The insurer could then hold additional liquid assets within the MA portfolio to ensure that no cashflow shortfalls arise within the relevant scenarios.

Impact on the investment process

Within an MA portfolio, assets should only be replaced to retain matching in the event of a material change in expected asset or liability cashflows. Insurers must also be able to hold the assets to maturity. On this basis, the underlying investment philosophy of an MA portfolio is often considered to be buy and maintain, but the definition of 'maintain' in this context requires the exercise of judgement by the insurer.

In the UK, the PRA has provided some clarification on what constitutes a buy and maintain strategy in the context of MA business. The PRA stated that "any rebalancing of assets within MA portfolios is strictly for the purposes of good risk management".

This clarification is still subject to interpretation. Clearly, selling assets to rebalance a portfolio back to adequate levels of matching, or back to within a targeted credit rating mix, could be considered 'good risk management'. But what about more proactive risk management? For example, selling a bond because the investment manager anticipates a downgrade? Or selling a bond because there is another bond with identical cashflows and of higher credit quality that could be bought at the same price? Or the implementation of a material change in strategic asset allocation arising from a change in risk appetite?

Our experience with insurance clients has provided insight into their investment philosophy and, in particular, their judgement on when it is appropriate to trade assets within an MA portfolio. 'Allowable trading' can then be set out in the investment mandate and can include trading triggered by the:

- insurer (e.g. surplus extraction, injections, changes to liability cashflow profiles)
- issuer (e.g. exercising a call option, default)
- investment manager (e.g. in response to rating downgrades, improving cashflow matching)

The insurer may also place limits on the turnover of the bonds within an MA portfolio, particularly in relation to trading triggered by the investment manager.

The investment mandate for an MA portfolio needs to set out the pre-trade compliance process that the investment manager should follow to ensure that all new assets are in line with the insurer's eligibility criteria. The insurer will also need to ensure that this process is consistent with their MA application.

The implementation of such a pre-trade compliance process can present operational challenges. For new issuance of public corporate debt, the investment decision by the investment manager will generally rely on the term sheet for the instrument and documented assurances from the Debt Capital Markets team of the sponsoring bank. The final prospectus may not be available for some weeks after issuance. In addition, the rating agencies will often provide expected, rather than final, ratings at the point of issuance.

Over time, the information provided in the term sheets could expand to support insurers' requirements (for example, detailing the make-whole levels on any unfettered options).

Use of internal credit ratings

Insurance companies are increasingly taking advantage of their long-term liabilities to invest in illiquid private debt. Many of these assets will not be rated by external credit rating agencies. While insurers may form an internal credit view on externally-rated assets, they are likely to rely solely on internal credit assessments for private debt. These assessments could include, as a key input, the investment managers' internal rating or underwriting process.

Within MA portfolios, the mapping between internal credit assessment categories and the European Insurance and Occupational Pensions Authority (EIOPA) Fundamental Spread categories will impact insurers' technical provisions and, for Internal Model firms, Solvency Capital Requirements. With the MA being subject to supervisory approval, this is likely to be an area of significant focus by the supervisor.

Within the UK, the PRA expect firms to have in place "suitable policies, processes, practices and documentation to demonstrate the appropriateness of their internal ratings". The PRA expects firms to have documentation covering a number of areas, including:

- **assessment methodology,** including the calibration and back-testing of those assessments.
- **review process,** including the normal review frequency and triggers for ad-hoc reviews.
- **governance framework,** including the extent of independent oversight and challenge.

The PRA also states that it "will require proportionate independent assurance, potentially involving third-party review, on the rating process."

The use of internal credit ratings is an area where investment managers can provide significant support to their insurance clients. The assessment of credit risk is core to the investment or origination process within the investment manager and this would be subject to due diligence by the insurer. It would appear to be a natural extension for the investment manager to support the insurer in leveraging this existing process when setting their internal credit ratings.

Using Derivatives for Cashflow Matching

As stated previously, a natural starting point for an MA asset strategy is to construct a buy and maintain portfolio of corporate bonds. However, a more flexible investment approach could be followed if interest rate swaps were to be added to the MA investment universe. If this approach was undertaken, the insurer can take shorter-dated credit exposures, with fewer maturity constraints, while still maintaining a matched position.

The PRA have explicitly considered such strategies, including their consistency with the buy and maintain requirements. In particular, the PRA have highlighted that "certain assets such as interest rate and currency swaps might be actively rebalanced to manage the risk profile of the fund". Where insurers use government bonds, or forward purchases of government bonds, to manage the interest rate exposures of the MA portfolio, it may be reasonable for them to actively rebalance those holdings to manage the interest rate risk profile.

As an illustration of how this approach works, consider an investment in a 15-year bond which matches a 15-year liability. An insurer could instead choose to hold a 10-year bond and a 5-year swap that starts in 10 years (or a 15-year 'receiver' swap and a 10-year 'payer' swap) to manage the interest rate risk. After 10 years, the insurer could then either hold the bond proceeds as cash and the swap (with this paired asset acting a synthetic bond) or close out the swap and purchase a 5-year bond with the cash proceeds.

Under this approach, the insurer can then select the optimal bond investment based on, for example, a capital-adjusted return metric, rather than being required to hold a 15-year bond to match the liability.

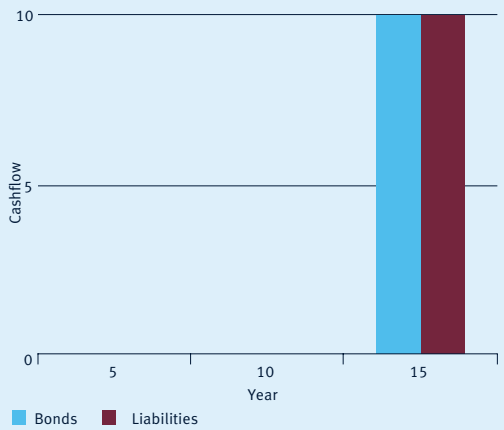
An illustration of this portfolio, showing the effective impact of the interest rate swap on the fixed cashflow profile of the portfolio, is shown in Charts 2 and 3 below.

While there are a number of potential advantages of this more flexible approach, there are a number of additional requirements that must be met to ensure MA eligibility.

These additional requirements include:

- eligibility of 'paired' assets
- hedge construction
- liquidity requirements and collateral management

Chart 2
Matching with bonds only

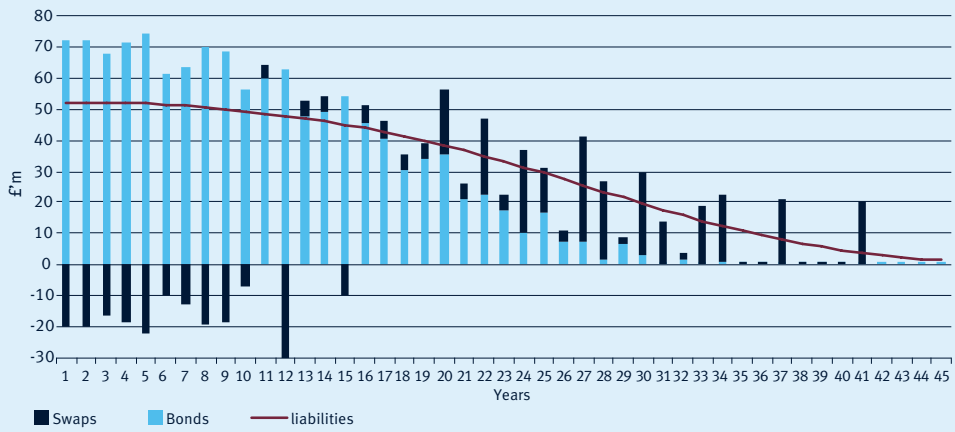


Source: Standard Life Investments, December 2015

Chart 3
Matching with bonds and swaps

Source: Standard Life Investments, December 2015

Chart 4: Annual Cashflow Matching



Source: Standard Life Investments, December 2015

Chart 4 shows a portfolio of investment grade corporate bonds and forward starting interest rate swaps ('Portfolio 2'). This portfolio has been matched against the same sample portfolio of in-payment annuities as Portfolio 1. The duration of the credit assets has been reduced in Portfolio 2 (9.5 years compared to 13 years in Portfolio 1) with the forward starting interest rate swaps managing the residual interest rate risk.

Eligibility of 'paired' assets

For an asset to be eligible for an MA portfolio, it must have fixed cashflows. Under a 'receiver' interest rate swap, the insurer would be obligated to make future, uncertain cashflows linked to the floating rate underlying the swap (for example, LIBOR). For this swap to be eligible for an MA portfolio, it must be paired with an asset (or portfolio of assets) that generates the relevant floating rate.

The following assets could be considered to provide the required floating rate:

- cash or other money market instruments
- a payer interest rate swap, under which the insurer receives the floating leg
- the future proceeds of a fixed interest asset (that is not required to meet any liability payments) – that is, cash that will be held within the MA portfolio in the future

One approach to assess whether the criteria has been met would be to carry out an assessment at a portfolio level. Under this approach, the insurer would assess the aggregate position in floating rate assets and ensure that these were sufficient to meet the floating rate obligations at each future time point.

The insurer would need to define the basis for assessing those future cashflows. In particular, whether the proceeds of the bonds should be assessed on a contractual basis or whether they need to be adjusted to reflect some discount for future credit risk.

The insurer would also need to set out whether they wish to assume any management actions in these tests. Within the UK context, it is worth noting that the PRA have set out that no actions should be assumed when carrying out their matching tests: "The PRA expects that for the purposes of projecting future cash flows to demonstrate cash flow matching [...] firms do not assume any future management actions."

One potential approach that does not assume any management actions is to hold all bond proceeds as cash. These cash holdings are then assumed to earn the appropriate floating rate, based on the market forward curve. We believe that this approach would be appropriate for the purpose of assessing the pairing of assets within an MA portfolio.

It is worth noting that, as in Portfolio 2, an insurer could enter into a 'forward starting receiver' swap rather than entering into separate 'receiver' and 'payer' swaps. This approach has the advantage that there would be no cashflows within the deferred period – under the combined package, there would be small net cashflows that reflect the fact that the fixed legs under the 'payer' and 'receiver' swaps will be fixed at different levels.

The portfolio level assessment is shown for Portfolio 2 in Chart 5 below.

This chart shows that, on a best-estimate basis, sufficient cash surplus is generated within the portfolio to meet the floating rate obligations under the forward starting swaps.

Finally, the insurer will also need to ensure that the interest rate swaps held meet the other eligibility requirements for an MA portfolio. For example, interest rate swaps written under International Swaps and Derivatives Association (ISDA) documentation will contain early termination clauses, allowing the counterparty to terminate the derivative contract under certain conditions. The PRA have stated that if derivatives have "break clauses [that] are considered to give the counterparty an option to change the cash flows, the terms should provide sufficient compensation to replace these cash flows" and so the insurer will need to make that assessment in respect of these break clauses.

Hedge construction

In the section above, we've described the key considerations to ensure the eligibility of the interest rate swap holdings. However, how could such an interest rate hedge be constructed from first principles and, more importantly, how would that hedge be maintained on an on-going basis.

Within the UK market, any such hedge will need to ensure that the resulting MA portfolio meets all of the PRA Tests. As a result, we consider two potential options for hedge construction:

1. An algorithmic hedge construction which is based on the cumulative Asset-Liability surplus profile, ensuring compliance with the 'forced seller test'.
2. Interest rate (DV01) matching within defined term buckets, ensuring compliance with the 'VaR test'.

Algorithmic hedge construction

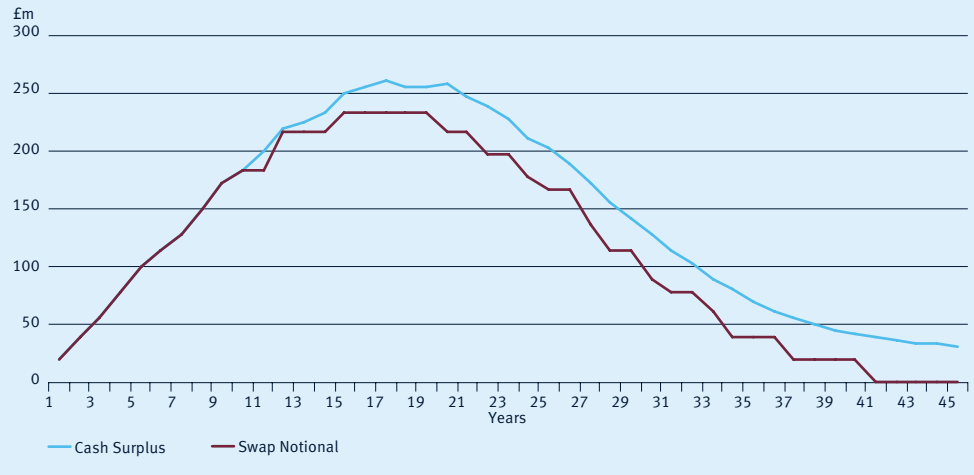
Under the first approach, a theoretical hedge would be constructed from the cumulative Asset-Liability surplus profile using an algorithm. This algorithm would determine the forward starting swaps that would be required to reinvest each surplus cashflow until the point that they are required to meet a liability payment. There are decisions to be made within this process, for example whether the earliest surplus cashflow should be used to meet the earliest liability shortfall or the latest liability shortfall.

This theoretical hedge is then translated into an investible swap portfolio, taking into account market liquidity and capacity. The resulting portfolio is consequently validated against the 'VaR test'. Alternatively, the insurer could use this approach to structure bespoke hedging instruments, known colloquially as 'rollercoaster' swaps. Under these contracts, the nominal amount of interest rate protection can vary by year and be specifically targeted to the needs of the insurer, resulting in a perfect match at that point in time.

Interest rate matching

Under this second approach, the insurer defines the term buckets that will be used for hedging. These will reflect market liquidity and capacity,

Chart 5: Cash Surplus and Swap Notional



Source: Standard Life Investments, December 2015

as well as the insurer's appetite for mismatch risk. The interest rate mismatch would then be determined within each bucket, based on the projected cashflows of the existing assets and liabilities. The investment manager would then determine the required changes to the portfolio of interest rate swaps to meet the client's constraints within each term bucket (which could result in existing swaps being closed or new swaps being introduced).

The resulting portfolio would then be validated against the 'forced seller test'. It is worth noting that new (at-the-money) interest rate swap positions would be expected to have limited impact on this test as the expected net cashflows would be relatively small.

Liquidity and collateral management

An insurer must have a liquidity plan in place for their MA portfolio. This clearly needs to consider the projected asset and liability cashflows of the portfolio, which would allow the insurer to demonstrate they can hold the relevant assets to maturity. The use of derivatives introduces additional liquidity considerations, notably in the area of collateral (and margin) management.

Within the UK market, "the PRA's view is that collateral in respect of an MA portfolio should be managed separately within the MA portfolio." One approach being used by insurers is to change their legal documents with derivative counterparties to support separate collateral arrangements for the MA portfolio(s) and the non-MA business of the insurer.

To give an indication of the scale of the potential collateral requirements, Table 1 sets out the potential collateral requirements for a 20-year 'receiver' interest rate swap, based on parallel increases in the yield curve. The collateral requirements have been expressed as a percentage of the nominal amount of the swap.

Table 1

Change in Yield (bps)	Collateral Requirement (%)
100	15
200	26
300	36

Source: Standard Life Investments, December 2015

Table 2 below sets out the potential collateral requirements of the interest rate swap portfolio within Portfolio 2. This has also been based on parallel increases in yield curve but it is worth noting that the swap portfolio is relatively more exposed to a steepening of the yield curve. The collateral requirements have been expressed as a percentage of the market value of Portfolio 2.

Table 2

Change in Yield (bps)	Collateral Requirement (%)
100	3.1
200	5.3
300	6.8

Source: Standard Life Investments, December 2015

The insurer will need to ensure that they have, or have committed access to, sufficient collateral (or margin) from within their MA portfolio to meet their potential requirements. This must be achieved without being forced to sell assets prior to maturity.

The obvious solution is for the insurer to meet this requirement by holding sufficient assets that qualify as eligible collateral (or margin) within their MA portfolio. However, it needs to be considered whether this would impact insurer's strategic asset allocation.

If the insurer is only able to post government bonds or cash as collateral, increasing their holdings of these assets would reduce the benefits of the MA for the insurer. In this situation, the insurer may be able to put in place committed agreements with banks that would allow them to source eligible collateral when required, potentially using their illiquid asset holdings as security. The costs associated with these arrangements, relative to the reduction in MA from increasing government bond holdings, will need to be considered by the insurer. Under central clearing, insurers may be obligated to provide variation margin in the form of cash, potentially increasing the appetite of insurers for these types of solutions.

Within the UK, the PRA have set out detailed requirements that insurers would need to meet in terms of the management of collateral. This includes consideration of how firms would manage the collateral they receive from counterparties, including how they would ensure that they remain in a matched position in the event of a counterparty default.

Advantages and disadvantages of a swap overlay

There are a number of advantages and disadvantages in deploying a swap overlay within a MA portfolio.

Advantages

- The ability to invest in credit assets that are shorter-dated than the liability profile allows insurers to target their credit purchases with fewer matching constraints.
- The insurer has discretion to choose whether or not to reinvest surplus assets into credit, which would allow the insurer to express tactical investment views or reflect changes in their credit risk appetite.
- The insurer may find it easier, and cheaper, to rebalance the portfolio in the event of changes in the liability profile as a result of, for example, changes in longevity assumptions.
- In the UK, the insurer is less likely to fail the PRA's 'forced seller test' as a result of their surplus short-term cashflows.
- A higher quality of cashflow matching can be achieved, although this may require the use of bespoke derivative instruments.

Disadvantages

- The insurer will need to satisfy the regulator that it meets all of the additional requirements that arise from holding derivatives, including those set out above, in relation to the pairing of assets, liquidity management and collateral management.
- The insurer will generally get a lower MA as a result of holding shorter-dated credit assets. This will be offset to some extent by lower capital requirements in respect of spread risk.
- The insurer is exposed to the risk that credit spreads reduce over time, making it unattractive to re-invest surplus assets into credit.
- The need for liquidity (or access to liquidity) to meet collateral requirements is likely to result in some drag on investment return.
- The insurer will be exposed to credit counterparty risk on any cash and derivative holdings.

Conclusion

The MA provides insurers with a capital-efficient mechanism for holding certain long-term assets where these match the cashflows of a portfolio of life or annuity insurance obligations. This paper sets out some of the challenges that insurers need to overcome in order to realise those capital benefits.

In terms of both asset management and client servicing, MA business is the most insurance-specific area of insurance asset management. Investment managers need the capability to meet the complex operational requirements that are an essential part of managing MA portfolios for insurance clients. This includes cashflow matching optimisation, internal credit ratings and bespoke buy and maintain credit mandates.

During 2016, we expect to see an increase in the number of insurers with MA portfolios. And, for insurers with existing MA portfolios, we expect to see further optimisation of both the underlying credit portfolios and the cashflow matching processes.

We expect that interest rate derivatives will continue to have a valuable role to play in managing MA portfolios. In our view, the main benefit is the additional freedom they provide to insurers to optimise credit investments using (for example) a capital-adjusted return metric and fewer maturity matching constraints.

This is an area where the investment manager can add significant value. The investment manager can embed both the insurer's cashflow matching process and the insurer's asset selection process (e.g. the assets that provide attractive capital-adjusted returns) into its investment process. And, having done so, it can directly source assets that optimise the insurer's Matching Adjustment portfolio.

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