

Using hybrid protection

Huub van Capelleveen uses a case study of the Rabobank pension fund to explain that managing all risks jointly is the next logical step in steering solvency

Pension fund strategies have changed enormously over the last decade. Many pension funds have exchanged asset-only portfolio construction for a much broader asset-liability management framework. As a result, most funds now manage their overall risk through the use of interest rate, equity and inflation derivatives.

However, these risks are managed individually. Therefore, the next logical step is to manage all risks jointly by focusing on the fund's entire solvency position.

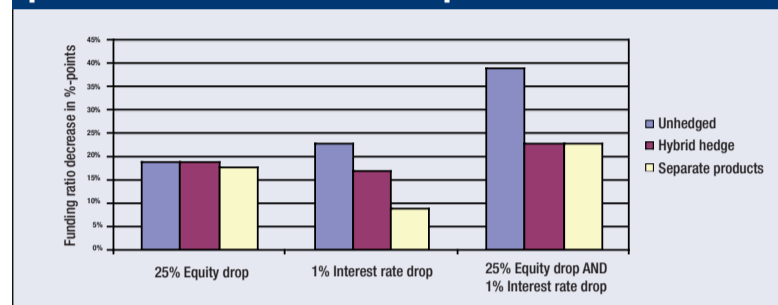
Most Dutch pension funds already had funding ratio-dependent policies on indexation and contribution. Risk budgets are becoming increasingly based on solvency-at-risk instead of more asset-only approaches. Although this solvency-at-risk focus should imply a holistic view on all risks, in practice the risk budget is often broken down in separate risk drivers managed independently. The simultaneous steering of all major risk drivers should therefore be a more efficient approach.

The €10bn Rabobank Pension Fund (RPF) has a high solvency buffer and a strong sponsor. Normal market fluctuations or even sharp price falls in a single market hold no direct threat for RPF; such market movements can be comfortably absorbed either by the fund's own buffers or limited additional contributions from the sponsor in combination with the flexibility provided by the fund's indexation policy. However, a combination of extreme worldwide equity price falls combined with a significant decrease in long-term interest rates could put the fund in a tight spot.

Consequently, the RPF board considered various risk-mitigation alternatives. In view of the assumed risk premium on equities it was considered desirable to hedge equity risk to the smallest extent possible; in other words, only hedge equity risk if the risk was unbearable and preserve the equity risk premium as much as possible. At the same time, RPF feared that long-term interest rates could rise due to a rise in expected inflation. Since fully hedging interest rate risk would then enlarge the inflation risk, the board did not consider it logical to fully or largely cover the nominal interest rate risk.

Therefore, solutions where the lion's share of the interest rate

Impact of a hybrid hedge versus separate products for Rabobank pension fund



risk was hedged, either alone or in combination with hedging of the extreme equity risk, did not lead to the desired risk/return profiles – the return impact of hedging the interest rate risk proved too great. The fund realised that buying option contracts on equities and interest rates separately would imply an 'over-hedged' situation, making the strategy too expensive in terms of expected return.

Since the fund's aim – to avoid extreme risks that would compel (large) additional contributions – is only endangered if both equity and interest rates were to turn against them simultaneously, the fund decided to implement an innovative hedging strategy using hybrid derivatives. The advice was formulated in cooperation with Rabobank International, Rabobank Netherlands Group Risk, Syntus Achmea Asset Management and Cardano.

In deciding to manage the equity risk and interest rate risk in combination rather than separately, it probably became the first pension fund in Europe to adopt the innovative instrument of hybrid options on a large scale.

These hybrid derivatives are specifically tailored towards avoiding the negative impact of a combined decrease in equity returns and interest rates on the funding level. In the situation where a downturn in equity markets is compensated for by an increase in interest rate levels, the hybrid contract will not pay out since the market developments are not detrimental to the fund's solvency. By avoiding over hedging a lower option premium is paid, up to 30% in this case. The premium was reduced even further by choosing a 'collar' strategy, combining protection with surrendering some upside potential.

The diagram shows the tailor-made hedging aspects of the

hybrid hedge. With the hybrid hedge, the protection against a single drop in equity or a single drop of interest rates is limited, while protection against a combined drop of equity and interest rates is quite good. Setting up a protection with separate equity options and swaptions that offer the same protection in the scenario of a combined drop in equity and interest rates as the hybrid hedge, the protection in other less dangerous scenarios is larger, implicitly showing the 'over hedge'.

While hybrid options may have clear benefits for pension funds, certain aspects need to be taken into account. They include:

Pricing: The actual price of hybrid options is often higher than the theoretical price. This is due to the extra transaction costs that banks charge for this product. These extra transaction costs relate to the priced-in correlation between equities and interest rates; the price of this 'implied correlation' as set by the market is often less favourable than its theoretical value. This impact can, for the pension fund, greatly reduce the benefits of a hybrid option versus a combination of a separate swaption and a separate equity put.

Although in recent years the market price has converged significantly towards the theoretical price, there can be major price differences between product suppliers. These differences, along with other factors such as credit risk mitigation by taking into account the credit ratings of the parties and negotiating good collateral agreements, make it extremely important to select the 'correct' parties. In RPF's case, even with the selected large reputable banks, the quoted transaction costs varied from almost double to over five

times the transaction costs of the 'separate' products. In light of this, it might seem tempting to ask as many parties as possible for an indicative price. That, however, would lead to market distortion, particularly with less liquid products such as hybrids, and thus a less favourable price. Therefore, it is vital to select a small number of good product suppliers and to make good arrangements about the execution method, which means a thorough knowledge of this market is indispensable.

Complexity: The use of hybrid derivatives demands a clear understanding of valuation. Fair valuation in the ALM phase and the risk budgeting phase, where the optimal solution for the pension fund's objective is determined, is very important. But also in the execution phase in which the product is purchased and during the implementation phase in connection with, for example, adjustments to changing circumstances, official reporting and collateral management, a clear understanding of valuation is crucial.

Though valuation can be contracted out, the board of the pension fund must also have an exact understanding of the working of a strategy based on hybrid derivatives. This means that the step to hybrid strategies is mainly suitable for parties that have already gained considerable experience using individual derivatives such as options for strategic and operational purposes.

Flexibility: Given these liquidity constraints, it is necessary to set up strategies in such a way that the number of transactions required, when adjusting the hedge to maintain adequate protection, remains limited. As interest rates and equity protection are amalgamated into a single product, altering the interest rate or equity component means that the entire product must be adjusted – which is obviously not the case when separate products are used for equity and interest rate risks. This objection can often be overcome by adding a limited proportion of 'separate', more plain-vanilla products to the hybrid strategy.

In the solution, it was decided to use the hybrids for 70% of the exposure. The remaining 30% of the required volume was implemented through the separate equity options and interest rate collars.

At times of rebalancing, contribution payments, indexation and strong market fluctuations, the derivatives overlay can thus be adjusted relatively easily by means of transactions in these separate products instead of requiring complex hybrid transactions.

The recent unfavourable markets have directly shown the usefulness of the chosen protection, granting RPF additional comfort.

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