



Deal of the year: Crédit Agricole

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Life insurers in Hong Kong have a fairly classic asset-liability management (ALM) dilemma: as interest rates have fallen, the generous guarantees they have embedded in their products are becoming increasingly hard to sustain. The introduction of two new regulatory reforms – a market-based solvency regime and new accounting standards for insurance contracts – are set to make this even more painful.

The solution that Crédit Agricole pioneered for the Hong Kong unit of French insurance group Axa was a strip of forward volatility agreements, carefully calibrated and executed to align with the firm's risk exposure and prevailing movements in the market.

“As a life insurer, we're selling products that have a significant amount of embedded optionality, and that embedded optionality is creating a short interest rate implied volatility position on our balance sheet,” says Torsten Blake Bohm, the team leader for ALM at Axa Hong Kong. “So when, in 2019, Crédit Agricole reached out to pitch us their forward volatility agreement, we were immediately interested.”

Convexity management, which captures the non-linear relationship between bond prices and interest rates, is a perennial problem for life

insurers. As interest rates fall, the more sensitive the bond price becomes to rate changes. The impact of convexity tends to be greater for longer-term bonds than for shorter-term ones. This effect is particularly acute for liability-driven investors running a positive duration gap, where average duration of liabilities is longer than average duration of assets. In this scenario, the value of liabilities changes faster than the value of corresponding assets.

“The low interest rate environment and the native convexity embedded in bonds have led to a profound change in the dynamics of fixed Income, moving from a ‘buy and hold’ world to an ‘in and out’ world with increased duration risk, [so] the need for solutions to hedge the risk of rate convexity [has] become a major issue,” says Samy Ben Aoun, global head of cross-asset and structured rates trading.

While convexity risk exists around the world, it is less acute in the more developed markets of Europe or the US, where policy-holders typically shoulder much of the risk. In Europe, the insurance sector long ago ditched highly guaranteed products in favour of unit-linked products, while US life insurance today is dominated by variable annuities. By comparison, the product mix in Hong Kong tends to be more traditional: policies where the sum is fully guaranteed and 100% of the risk sits squarely with the insurance company. This makes it more challenging for those that underwrite such policies to continue to service them, particularly in a low interest rate environment.

“This requires a very proactive approach to managing ALM,” says Frederic Marquer, head of solutions sales in Asia-Pacific for Crédit Agricole. “The easiest solution to think of is a swaption-based structure, simply because convexity and swaption pay-offs are both non-linear. But there are two problems with using swaptions. One is that they are quite costly. Secondly, they need to be actively managed, requiring trading decisions.

“This can be a distraction from chief investment officers and ALM heads’ core mandates, such as looking at strategic asset allocation and optimisation of capital consumption at the margin. The decision on ‘when do we get in?’, ‘when do we get out?’ can be addressed via a strategy with automatic monetisation embedded.”

The arrival of the Covid-19 pandemic at the start of last year reinforced the challenges of managing convexity risk, as interest rates on 30-year treasury bonds plummeted from 230 basis points in January to under 70bp within the space of two months (although they subsequently bounced back to just over 100bp).

“Like most lifers, we have a negative interest rates convexity position and, in order to manage our interest rates’ duration risk, we need to regularly buy or sell interest rate duration,” says Axa’s Bohm. “With Crédit Agricole’s solution, we can partially close the convexity gap on our balance sheet in a cost-efficient way and reduce the magnitude of the delta one transactions that we need to do in order to manage that position.”

In response to the challenges that convexity management presents to insurers, Crédit Agricole came up with a forward volatility agreement, or FVA, which it successfully pitched to Axa. This consisted of a series of one-year/30-year spot- and forward-starting at-the-money straddles. Forward-starting swaptions are those where the strike price is not known immediately, but is only set at some point in the future. The duration of these swaptions was set at five years, and the strike rate was determined at the beginning of the period.

While the idea behind the solution appears simple, there were a lot of behind-the-scenes decisions that had to be taken, which really showcases Crédit Agricole’s engineering expertise.

First of all, Crédit Agricole settled on a year for the duration of the straddle. Fabien Lanneluc, head of non-linear trading for Asia, says this period was “short enough to bring a high level of convexity hedging, but long-enough that the client didn’t have to trade too many”. A three-month straddle would not have been convenient, he says.

Another important consideration was the tenor of the underlying trade, and Crédit Agricole wanted to select a tenor that was as long as possible, such as a 30-year tenor, because that is where it



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would get the best convexity hedging.

“The longer the asset or swap is, the more convexity it has. In fact, convexity has a quadratic relationship with the tenor. So, for example, if the tenor increases from 20 to 30 years, the maturity goes up by one-and-a-half, but the convexity will more than double,” says Lanneluc.

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Fabien Lanneluc, Crédit Agricole

But there are limits to how far the tenor can be increased, because for the structure to work efficiently there needs to still be high levels of liquidity in the underlying market.

“We found 30 years to be the best choice because the swaptions market is really liquid and brings the maximum convexity,” says Lanneluc.

Since interest rate levels only affect the first straddle that is put on, with the rest of the strategy only being sensitive to volatility, the benefit to Axa is clear.

“If you start trading and rates then shoot up a few months later – as they did this year – the client will immediately start looking at a restructuring because the product is not at-the-money anymore, and would have lost quite a bit of the convexity exposure,” Lanneluc says. “With the structure that we have put in place, the one-year/30-year that is already fixed performs quite well because there has been a big move, and the rest of the strategy is still at-the-money so it remains in place. There is no need to restrike.”

The final part of the engineering behind the product was when it should be executed, and this was largely determined by Taiwan’s Formosa bond market, which has a significant impact on US treasuries.

“We had been discussing this solution with our client for many, many months. And when they were starting to get really convinced, they asked us: when do you think we should do this transaction? We immediately responded that it would be most logical to execute in the first part of the year, because that is when the Formosa flow would be coming. So

volatility shot up with the start of Covid, but then it came down quite a bit in anticipation of the Formosa season.”

The other benefit of executing at this point was that Crédit Agricole is fairly active in Taiwan’s Formosa market, so the product provided a natural hedge against the sizeable Taiwanese trades that the French bank was making at the time.

“We were able to provide a better price to both our clients because there was a matching flow,” says Lanneluc.

Axa was huge appreciative of the product.

“We were quite impressed by the level of support we received from Crédit Agricole, and the extent to which they understood our balance sheet and the particularities of the life insurance sector, and how well they tailored their product offering to those needs,” says Bohm.

So far this is the only FVA solution that Crédit Agricole has executed in Hong Kong, but Marquer says that at least two other clients are currently exploring the viability of introducing such a product into their convexity hedging. The solution may also be suitable for other jurisdictions in which insurance companies are finding it hard to locate assets of sufficient duration to match their liabilities.

“Markets like Taiwan and South Korea spent years selling policies that with hindsight had guarantees that were too high for where interest rates eventually went,” says Marquer. “These situations require very proactive approaches in terms of ALM management, and deploying derivatives and structured products in a much more intensive fashion than in some of the other regions.”

And then there is the introduction of new solvency frameworks and accounting standards across the region that are currently being rolled out. The IFRS 17 accounting standard for insurance contracts will be introduced in many large Asian insurance markets – including Korea, Taiwan, Hong Kong and Singapore – by 2023, while many of these jurisdictions are simultaneously looking at rolling out a more market-based solvency framework. Implementation of this is already under way in Hong Kong, and should be completed at some point next year.

“These two things will make this solution relevant for Asia for some years to come,” says Marquer.

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