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# FX hedging for private debt funds

Access advantage

# Foreign exchange (FX) exposure

## Foreign exchange hedging is a complex topic. Each hedge has a precise structure that serves a particular need.

This paper is specifically targeted at private debt fund[1] managers and their requirements. It introduces the key sources of FX exposure, some common methods for mitigating FX risks, and some of the challenges and choices that typically arise around that process.

Many debt funds offer finance (loans) in currencies other than the one in which they report or are denominated. As a result, they are inherently exposed to FX risk. At a basic level, any depreciation of the currency in which the asset (loan) is held versus the reporting currency will decrease the asset's value (and related coupons) in the reporting currency. Most debt fund managers will seek to mitigate this risk via an FX hedging programme. This safeguards returns and restricts the fund's risk profile purely to the ability of the borrower to repay the loan (credit risk).

However, the construction of such a programme is an intricate task requiring the consideration of a number of variables, not least the inevitable cost of hedging, either in credit consumption or cash. As adopting a tactical approach to mitigating FX risk in an optimal way is not typically part of a manager's remit, in the below we have outlined the key factors debt managers need to consider.

# Currency impact on IRR

A simple example: a euro-denominated fund made a £10M loan at 1.3000 (€13M) ahead of the UK Brexit referendum in June 2016. Today, due to the depreciation in sterling following the result, that asset/loan is now worth €11.75M (£10M at 1.1750). This equates to a loss of €1.25M without hedging.

A range of possible outcomes from currency fluctuations over time is shown in Figure 1.1. The graph illustrates the internal rate of return (IRR) for a hypothetical USD fund investing in a series of euro-denominated loans over a period of seven years. Assuming the euro-denominated IRR of the portfolio averaged 11.6% over its lifespan, we use historical EUR/USD exchange rate data to calculate a dollar-denominated IRR for the same fund for a range of vintage dates from March 1999 to August 2010. The results illustrated by the graph are material.

A foreign exchange adjustment can be positive or negative, depending on whether the asset (loan) currency strengthens or weakens over the course of the fund's life. The important factor for debt fund managers to note is the range of potential outcomes to their base case IRR.

Over the period considered in our example, the standard deviation of returns in the unhedged case is over 4% — meaning that a significant proportion of outcomes involve a considerable erosion of the base case IRR due to FX movements. For lower return funds, this level of erosion can easily transform returns into losses. The blue line illustrates the range of IRR outcomes under the same market scenarios but with the euro-denominated assets hedged back to USD using a programme of rolling FX forwards (described below). While hedging cannot completely eliminate the FX risk, the range of outcomes is substantially reduced, with the standard deviation brought down to 1.5%.

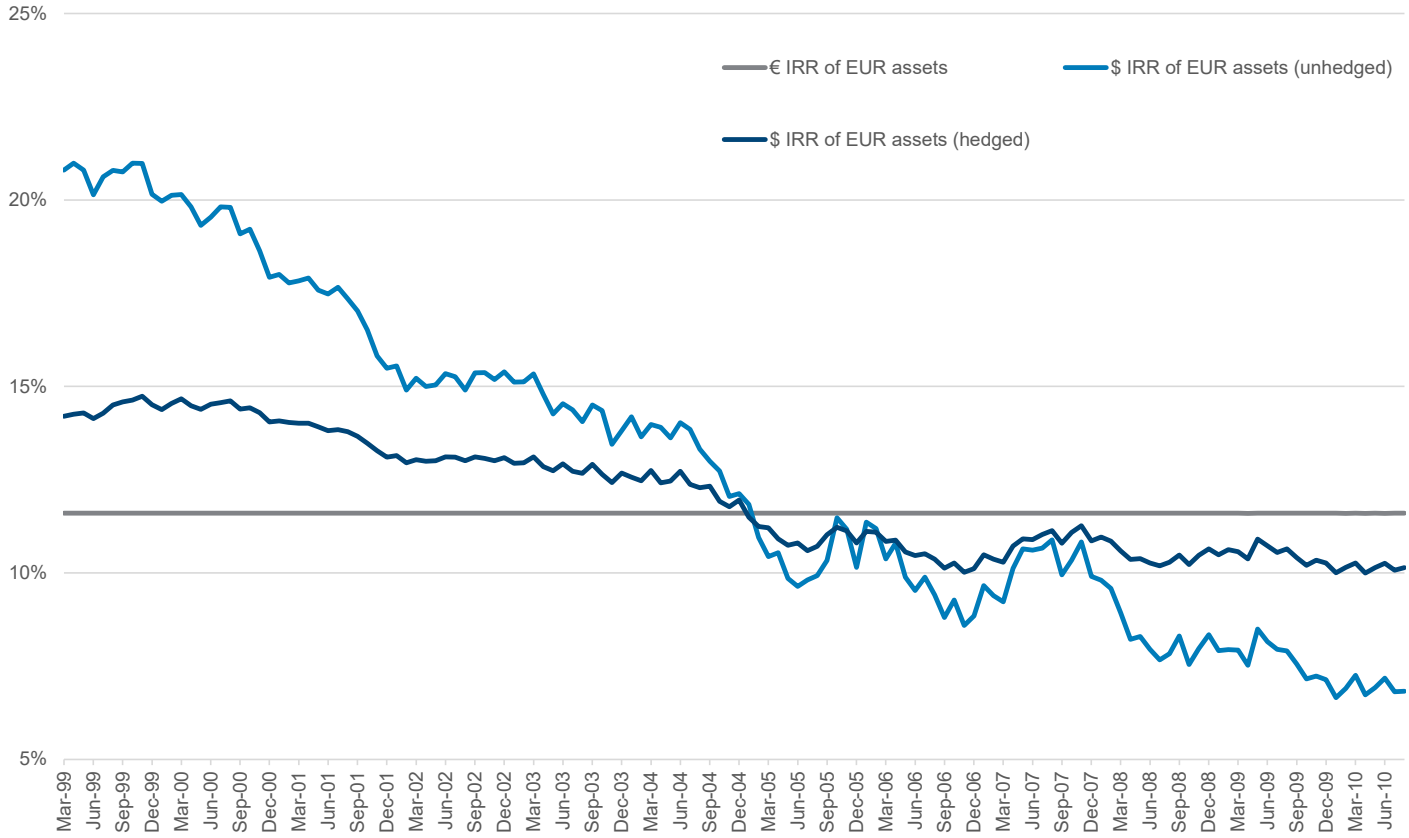
## Table 1.1: Historical distribution of returns for a USD fund investing in EUR loans (hedged vs. unhedged)

| | Unhedged | Hedged |
|---|---|---|
| **Mean** | 12.89% | 12.04% |
| **Standard deviation** | 4.37% | 1.56% |
| **5th percentile** | 7.16% | 10.14% |
| **Minimum** | 6.65% | 9.99% |

Source: Chatham Financial

[1]The term private debt funds is used to describe the universe of all private credit/direct lending vehicles.

## Figure 1.1: Impact of FX movements on the IRR of a USD fund investing in EUR loans (hedged vs. unhedged, vintage March 1999 — June 2010)




Source: Chatham Financial

# The forward curve

## A currency with lower interest rates trades at a premium in the forward market to one with higher interest rates, and vice versa.

In the current market, this creates an additional cost for a euro-denominated fund with GBP assets, since the fund needs to sell sterling (buy euro) forward to hedge back into EUR. Sterling, on account of its higher interest rates, trades at a discount to the euro in the forward market. This can be seen in Table 2.1.

However, for a sterling-denominated fund lending in euro, the situation is reversed. Such a fund will need to sell euro forward against sterling to hedge, while the euro trades at a premium to sterling in the forward market. In this situation, the fund is effectively 'paid' by the market to hedge.

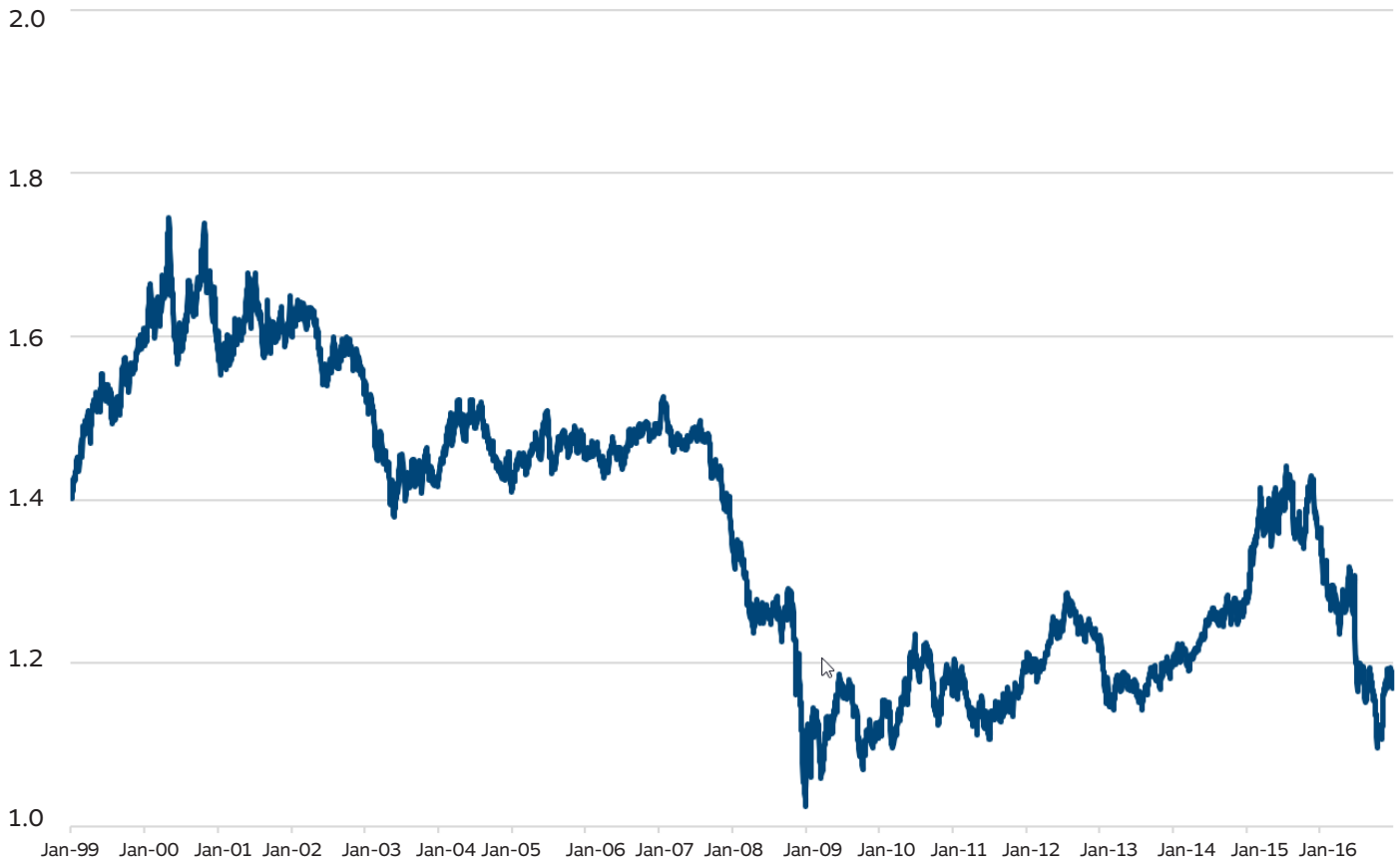
Given that only a small positive interest rate differential is required to offset the dealing costs of FX derivatives, many funds find themselves in this favourable position. This includes not just sterling-denominated funds lending in euro, but also US dollar funds lending anywhere where interest rates are lower than in the US – into both euros and sterling at the moment.

## Table 2.1: The GBP/EUR forward curve

| Spot | 1 month | 3 months | 6 months | 9 months | 12 months | 24 months | 36 months |
|---|---|---|---|---|---|---|---|
| 1.1699 | 1.1686 | 1.1662 | 1.1624 | 1.1584 | 1.1546 | 1.1391 | 1.1243 |

Source: Chatham Financial (as at 02 April 2019)

## Figure 2.2: Spot GBP/EUR (daily close), January 1999 — January 2016




Source: Bloomberg

# Feeder funds and sub-classes

Some debt funds may not offer a fund denominated in their investors' currency or may decide not to hedge their FX risk and leave it to their investors to manage. To certain investors, this may be acceptable as they hold large, diversified portfolios and will likely have an active centralised hedging programme. They may also prefer the fund manager to focus solely on the credit profile of the borrowers. But other investors require the security of knowing that FX risk is not going to eat away at their return at source. In such a situation, hedging may take place at feeder fund or sub-class level. The principle is the same.

**A significant dollar investor looking at a euro fund may insist on channeling its capital via a 'feeder fund' structure to ensure its FX risk is hedged.**

Here, the investor would commit dollars into the feeder fund, which in turn would invest in the euro-denominated master fund. At the same time, the master fund would sell EUR forward against USD to hedge its investment at the 'feeder fund' level.

A feeder fund may be set up for one investor or for many, and in the latter case it represents a 'dollar-hedged sub-class'. Subsequent USD-reporting investors can choose whether to invest in this hedged sub-class or in the unhedged EUR sub-class.

In this scenario, any FX hedging pertains solely to the feeder fund/sub-class. It is, therefore, paramount that contamination of the main fund is avoided by keeping the feeder/sub-class FX hedging discrete. In the case of a feeder fund, a providing bank asked to extend credit to support the hedging strategy will make a decision based on the credit worthiness of the feeder fund rather than the main vehicle.

On the downside, this structure presents an administrative burden that some funds do not have the internal resources to manage. However, in the competition for investors' capital, offering sub-funds is one way for managers to broaden their potential investor base.

# Challenges posed by FX hedging programmes

If a fund manager has taken the decision to actively address their FX risk, they will put in place a policy prescription to demonstrate to investors how they will mitigate this exposure. As with any risk management strategy, risk is never fully eliminated, but only transferred. Some of the risks inherent in the management of a hedging strategy are detailed below.

## Managing rollovers

A perceived disadvantage of a rolled over short-term forward contract is the possibility that, upon rollover, the fund may experience a negative cash event.

This has been a particular issue for sterling-denominated funds due to the sharp depreciation in sterling since the Brexit referendum.

For example, a sterling-denominated fund may have chosen to make a euro-denominated loan and then sold EUR forward against GBP for three months as a hedge. After three months, the fund must roll its hedge over by executing an FX swap in which the fund buys back euros at spot value and simultaneously sells EUR forward for another three months. However, if the GBP/EUR exchange rate on the old, maturing forward trade was, for example, 1.3000 and the current spot rate is 1.1750, the fund will have made a loss on the hedge of €0.125 or approximately £82,000 per €1M hedged. This loss crystalises on the rollover of the hedge and needs to be funded.

It is important to note that the realisation of a loss on rollover does not have any impact on the overall return (if we assume the cost of funding that loss is negligible).

In our example, as the fund rolls over the hedge, it loses €0.125 on the spot leg of the FX swap but gains €0.125 on the forward leg, since the three-month forward rate will also have moved lower in parallel with the spot rate. However, this will be no consolation if the loss on the spot leg cannot be funded until it is offset in three months' time by the profit on the forward leg and needs to be settled immediately.

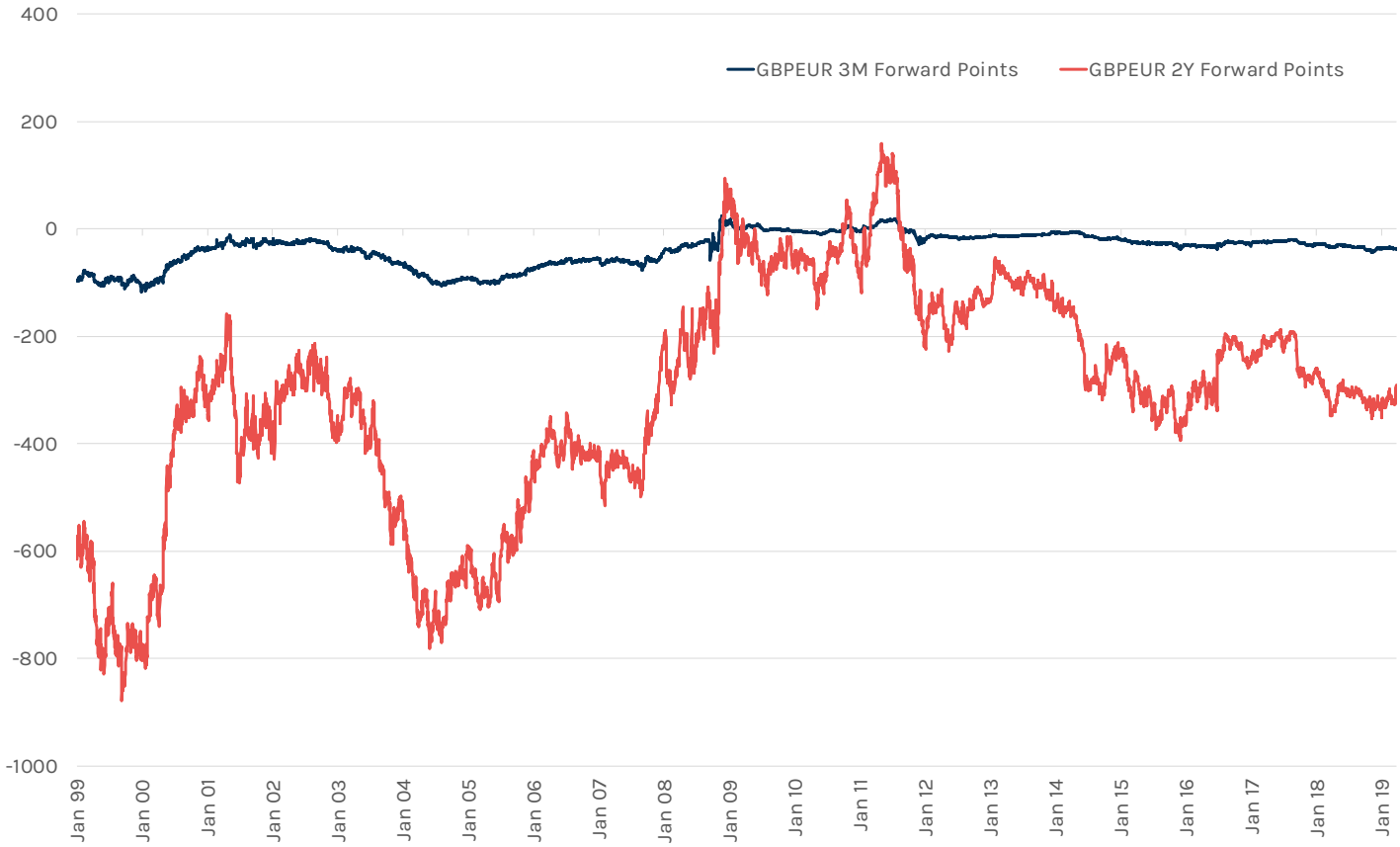
## Negative cash events — liquidity risk

Where credit constraints preclude the implementation of long term hedging to cover the full tenor of a loan and managers must rely on shorter term hedging, it is essential to maintain sufficient liquidity to cover the risk of negative cash events.

If a short term FX forward contract has a negative mark to market at maturity and the contract is rolled over, the negative value will still be realised. This can present a liquidity challenge.

Some funds use revolving credit facilities (RCFs) or 'call' facilities that they draw down when a maturing forward hedge contract crystallises a loss that is too great for the fund's natural liquidity position. This can be an excellent method of mitigating the liquidity risk of hedging with short term forwards. Multi-currency RCFs allow widely diversified funds to cover the liquidity risk against a variety of foreign currencies. This type of finance is very widely available and, in the current market, extremely competitively priced. There are a variety of structures. How these can be deployed to support an FX hedging strategy varies from lender to lender.

## Figure 3.1: Three-month and two-year forward adjustments, January 1999 — March 2019




Source: Chatham Financial

Figure 3.1 shows the extent to which the GBP/EUR interest rate differential has moved over the years, expressed as the number of GBP/EUR pips applied to the spot rate to derive the forward rate, where -400 means that sterling trades at a discount of 4 cents in the forward market. While the movements in the three-month adjustment (the blue line) are relatively muted because of the short tenor, those planning on longer term hedging should take note of the gyrations in the two-year forward adjustment (the red line).

Fortunately, most debt funds discourage borrowers from repaying early with early repayment penalties. Nevertheless, it is particularly important that debt funds contemplating FX hedging have sufficiently rigorous penalties in place to cover potential breakage costs relating to that hedging. Standard penalty agreements may be insufficient in the event of large changes in interest rate differentials.

## Overlay strategies

'Overlay strategies' come in various different guises. For our purposes, the term refers to the use of models to decide whether or not a particular currency pair should be hedged or not. Some models are programmed to consider a combination of previous price action in the spot market, the shape of the forward curve, and the level of implied volatility in the options market to decide whether to hedge or not. Others analyse momentum indicators in order to spot trends.

**One of the advantages of these strategies is that they typically restrict themselves to hedging in the spot market, meaning that credit lines for forward trades are not required.**

For a small start-up fund with little or no track record, such overlay strategies can appear to offer the best of both worlds: protection against adverse currency movements without the difficulties around credit that so often arise when using forward contracts to hedge.

However, there is no such thing as a free lunch. Overlay strategies tend to underperform a normal forward hedging strategy when the underlying currency pair moves against the fund. Whatever method determines the hedge — human judgement or momentum-seeking algorithms — it will inevitably lag a permanently-in-place forward when it comes to protecting against an adverse market movement.

But the opposite is also true. In the case of a beneficial underlying currency movement, an overlay strategy at least stands a chance of outperforming the traditionally hedged position thanks to any unhedged component, which will by its nature reflect the market move.

Whether an overlay strategy will beat a strategy based on vanilla forwards over a given timeframe depends on two factors: the extent to which the overlay strategy outperforms the forward strategy during favorable underlying moves relative to the extent to which the forward strategy beats the overlay strategy during adverse moves. Given FX markets' tendency to trend, the choice of an overlay strategy rather than a forward strategy could look brilliant, or awful, depending on whether the most prominent market move over the period considered was positive or negative for the underlying position.

## Regulation

It is important that the hedging entity takes care to assess its regulatory obligations. For example, under EMIR, entities classified as FC (Financial Counterparty) or NFC+ (Non-Financial Counterparty above EMIR clearing thresholds) are required to post collateral for certain types of derivatives. This can be an onerous process that creates a significant operational burden, as the hedging entity may need to post collateral on a daily basis. Meanwhile, entities classified as NFC- (Non-Financial Counterparty below EMIR clearing thresholds) don't have this obligation. It is sometimes possible to mitigate the regulatory impact by efficiently structuring the hedging strategy or changing the entity that is counterparty to the hedge.

## Summary

**01** The return levels of debt funds - typically lower than those of their private equity counterparts — mean that FX hedging can be central to their strategies and appeal to investors.

**02** A manager's access to credit to finance its debt fund's FX hedging strategy is critical. It can define the shape of the strategy and pose a significant challenge — particularly to first-time funds with little or no track record.

**03** As always with FX hedging, liquidity risk can lead to unwelcome cash demands. This should be thought through at fund origination and actively managed thereafter.

**04** Unforeseen cash calls can be more damaging to a fund's return profile than unrealised FX losses.

**05** There is no "one size fits all" when devising an effective FX hedging strategy, which should be sufficiently flexible to adapt to market shifts and the needs of a fund throughout its lifecycle.

# Appendix I

## Strategies deployed to mitigate FX risk

The FX hedging technique most commonly used by debt funds is a simple, vanilla sale of foreign currency for the reporting currency or, if credit allows, a cross currency swap.

### Cross currency swap

In the case of a EUR-denominated fund lending in sterling, the fund would notionally exchange EUR for GBP valued at the spot price and commit to physically exchange GBP back for EUR at the end of the loan period in, say, three years' time at the same exchange rate. In the meantime, the fund would pay floating three-month GBP Libor plus whatever margin it charges on its asset (to exactly match GBP payables and receivables) and receive the equivalent three-month floating EUR interest.

### Forward contracts

With a forward contract, the fund simply sells GBP forward to a certain date. Unlike a cross currency swap, where the GBP/EUR interest rate differential manifests itself over the life of the swap through GBP payables and EUR receivables, with a forward the interest rate differential manifests itself at maturity in the form of a forward rate that is different from the spot rate (see Figure 4.1).

In an ideal world, synthetic foreign currency liabilities, created by cross currency swaps or forward contracts, should be matched as closely as possible to foreign currency assets. However, typical tenors for loans are between three and seven years, and long-term FX hedging lines are very consumptive of credit and therefore expensive from a credit perspective. On the other hand, as debt funds tend to be small (relative to private equity vehicles), obtaining credit can be a challenge. A manager may find that having made a three-year loan, the fund can only secure a three-month FX line and after three months, the hedge (the three-month forward) contract will have to be rolled over.

### Limit loss forwards

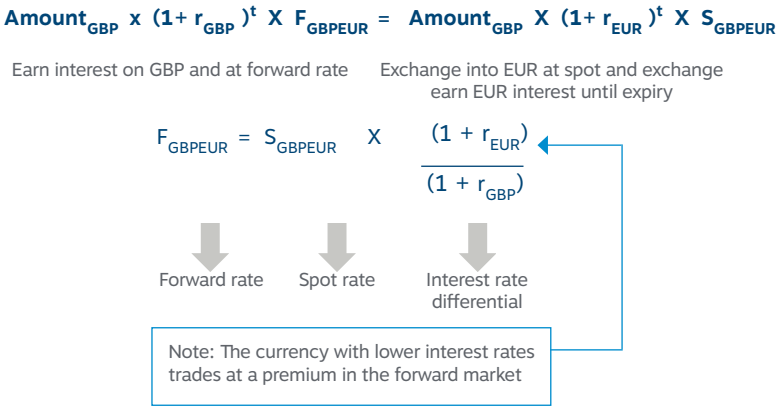
In order to limit the extent to which a forward contract can crystallise a loss on rollover, some funds — typically smaller vehicles with a limited track record — use limit loss forwards.

For example, a euro-denominated fund with sterling assets may have decided to hedge the risk of sterling depreciation by selling GBP against a EUR three-months forward at a GBP/EUR exchange rate of 1.1720. From a liquidity perspective, the fund is now at risk of an appreciation in sterling, leading to the crystallisation of a loss on rollover of the forward contract. In our example, the fund anticipates coupon payments on its loan portfolio of 2% per quarter and its sterling-denominated assets represent 30% of the portfolio.

If at the end of the quarter, sterling has appreciated by more than 6.67% against the euro, the fund will find itself in the unenviable position of having to use all of its income in that quarter to make good on the crystallised loss on rollover of the forward contract. The fund manager decides that restricting the maximum loss on a forward to 5% of the hedged amount makes sense in order to leave a prudent amount of headroom underneath the 6.67% absolute limit.

Rather than hedge with a vanilla forward, the fund in our example elects to use a limit loss forward instead. This is achieved by selling sterling three-months forward and simultaneously buying a 5% out-of-the-money GBP call/EUR put option. The premium for the option is embedded into the forward contract, meaning no upfront premium is payable. The embedded GBP call effectively cancels out the forward contract once the spot rate has moved 5% above the rate on the forward contract. The fund can now be confident that, unless there are unpaid coupons, it will have liquidity to spare, even if the exchange rate moves significantly more than 5% higher.

## Figure 4.1: Forward rate explanation




Source: Chatham Financial

A perceived disadvantage to this strategy is cost. A 5% out-of-the-money forward GBP call/EUR put option currently costs in the region of 0.7% of the notional hedged amount. Using this strategy every quarter would act as a roughly 2.8% per annum drag on the performance of the fund's GBP-denominated assets — or in our example, around 0.85% of the fund's overall annual performance. This is clearly very expensive. Then again, as we have seen of late, GBP/EUR is a very volatile currency pair. A similar strategy for a USD fund investing in euro-denominated assets would cost only around 0.3% rather than 0.7%.

The above example shows how a limit-loss forward can protect a fund's natural liquidity provided by its income. Limit loss forwards may also be used where a fund has not secured a 'clean' line for its FX hedging but is subject to a credit threshold, above which collateral must be posted, an arrangement often formalised in a credit support agreement (CSA). The principle remains the same and the strike rate of the embedded GBP call/EUR put option would be set such that the option cancelled out the forward at the rate at which margin became payable under the CSA. The same technique can be used to control potential negative marks to market on cross currency swaps.

## FX options

Some debt funds prefer to hedge FX risk with FX options. These confer on the holder the right — but not the obligation — to exchange one currency for another at a pre-agreed rate (the 'strike rate'), on a pre-agreed date. This is the most flexible hedging instrument to use and avoids many of the disadvantages of FX forwards with regard to management of rollovers and liquidity. Many funds do not even consider options as they conclude that they are too costly. However, in certain market conditions, and appropriately structured, options can be the right answer and on a relative cost basis need not be expensive.

## Advantages

- The premium payable and therefore the maximum negative cash flow is known in advance.
- No credit line is required beyond a small line to cover the two-day period between the purchase of the option and the payment of the premium.
- Allows the fund to benefit from advantageous movements in the underlying currency pair.

## Disadvantages

- Premiums may need to be paid in advance.
- Premiums are priced on the basis of the ability to benefit from advantageous movements. This is a feature that debt funds may not require and for which they would therefore rather not pay.

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