A Primer on Interest Rate Markets and Relative Value – Part 3: Swaps

Interest rate swaps are one of the largest and most liquid derivative markets. Swaps provide highly flexible solutions to manage risk, speculate on the direction of interest rates and implement relative value (RV) trading strategies.

In this third note in a series of primers, we outline key introductory concepts in swap markets with a focus on relative value (RV) investing. This note builds on two earlier primers:

- Part 1 outlines general concepts of yield curve risks, relative value analysis of curves and examples of common trading strategies.
- Part 2 outlines key features of government bond markets for RV investing.

Our primers assume only a limited background in fixed income. We emphasise the practical elements of markets and RV and deliberately avoid detailed technical descriptions on the mechanics of instruments and risk measurements.

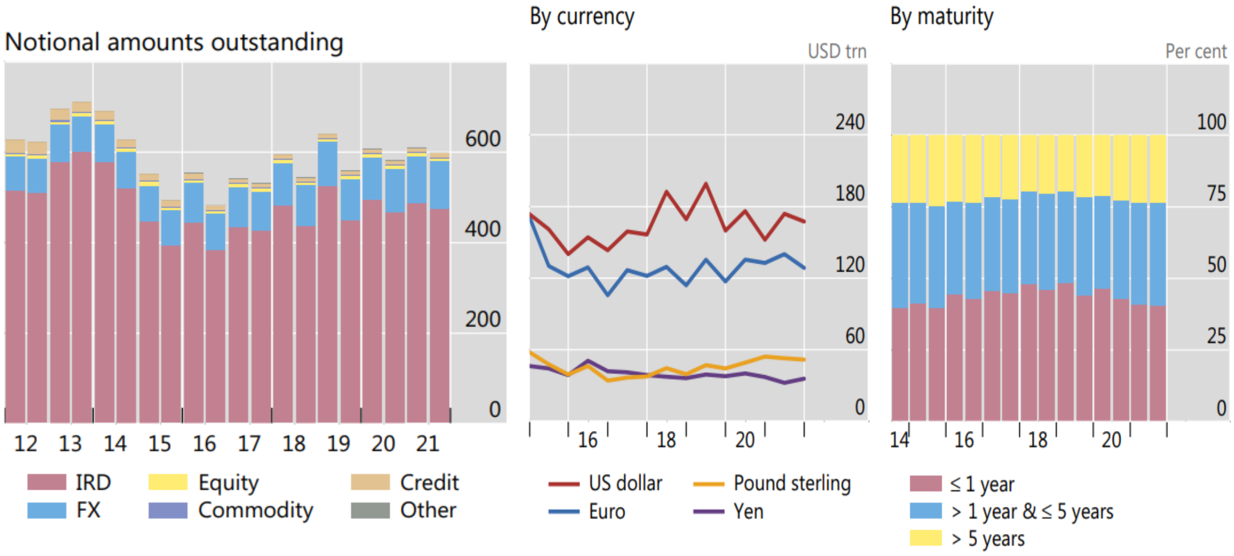
The following areas are covered in this primer:

- Interest rate swap market background.
- Swap features and uses.
- Pricing and risk.
- Swap forwards and RV.
- Swap carry and rolldown.
- RV analysis of swap curves.
- Basis swaps.

Interest rate swap market background

Interest rate swaps are among the most liquid and deep derivative markets in the world and have been actively traded since the 1980s. As of H2 2021, the total size of interest rate swaps in notional outstanding was estimated at $397tn – the largest component of the $475tn OTC interest rate derivative market, which in turn is the largest among global OTC derivative markets. The USD and EUR markets are the largest for interest rate derivatives, with underlying tenors of 0-5y the most common (Chart 1, based on BIS data). There are also active interest rate swap markets across many other currencies, particularly in the G10.

Chart 1: OTC Derivatives Outstanding (USD trn) and breakdown of interest rate derivatives by currency and maturity



Source: Bank of International Settlements OTC derivatives statistics

Interest rate swap features and uses

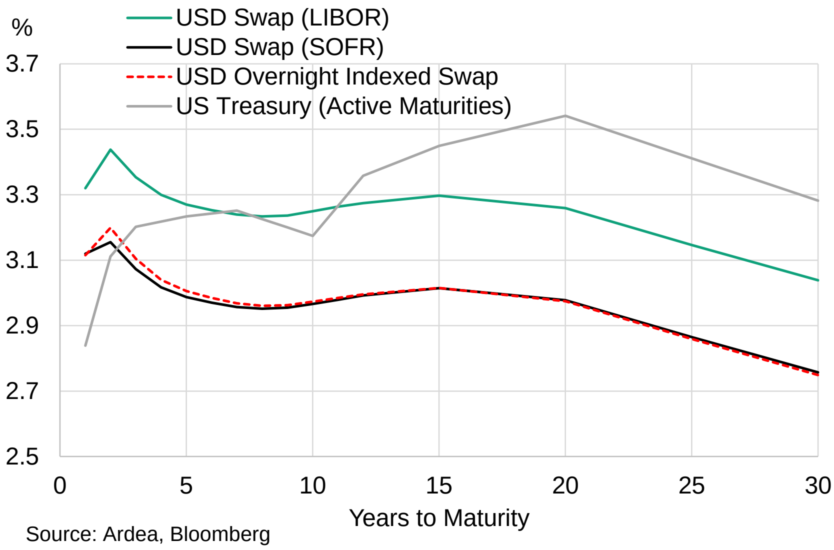
Swaps are used across most asset classes to exchange one form of cash flow for another. Whereas bond markets have a distinct borrower and lender, the interest swap market is built around exchanging interest rate payments. The most common form of an interest rate swap – often called a "vanilla" swap – is where two counterparties exchange fixed for floating interest rate payments. We outline the features and uses of swaps based on a vanilla fixed versus floating structure.

Some basic features of swaps:

- **Maturity:** the tenor of the swap is based on the maturity date and the difference between that date and today (forward starting swaps are also common). Swaps are traded across a wide spectrum of maturities, from very short term periods such as 1m or 3m to 30y or longer.
- **Notional face value:** This is the face value amount which the interest rate swap transaction is based on but is not actually exchanged in a typical vanilla swap trade. For example, an investor might seek to pay fixed rate swap based on a notional value of $500m but does not actually exchange this face value with a counterparty. Instead, there is a netting of payments based on the fixed and floating rates through the life of the swap.
- **Floating rate:** the floating or variable rate in a swap is based on some underlying benchmark rate. Traditionally, bank floating rates such as LIBOR rates formed the basis of most swaps, but this custom has changed due to reference rate regulations over recent years in some major markets, such as the US. The US now also sees swaps transacted referencing alternative rates, such the Secure Overnight Funding Rate (SOFR). There are still other markets such as Australia and Europe where respective BBSW and Euribor rates are common and based on floating bank funding rates. Across all markets there is the capacity to trade swaps referencing a cash or central bank policy rate – commonly referred to as Overnight Indexed Swaps (OIS).
- **Fixed rate:** The fixed rate on a swap is agreed up front and is the market rate to maturity for a

given swap tenor.

Chart 2: USD Swap and Treasury Curves



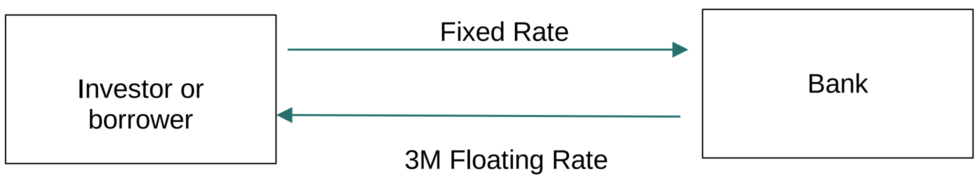
Source: Ardea, Bloomberg

Some common uses of interest rate swaps:

- **Liability hedging:** borrowers with large bank loans or bond issuers can manage the risk of rising rates.
- **Asset hedging:** an investor in an interest rate sensitive asset or bank treasury might use swaps to manage the risk of falling interest rates.
- **Interest rate speculation:** investors can position for changes in the direction of market interest rates – higher or lower – through paying or receiving fixed in a swap.
- **Asset swapping and swap spread speculation:** bond investors use swaps to repackage cash flows in fixed rate bonds to create synthetic floating rate securities and also actively position for changes in the spreads between bonds and interest rate swaps (discussed in detail in Part 2).
- **Portfolio overlay:** a fixed income fund manager can use swaps to alter the profile of interest rate or duration risk in a portfolio.

Chart 3 shows a basic swap structure. In this example, an investor or borrower is paying a fixed swap rate and receiving a floating rate. The borrower might be concerned about rising interest rates increasing the cost of servicing debt and so undertakes a swap transaction to hedge. An investor might take a similar position to speculate on rising interest rates or as an overlay to hedge against capital losses on a bond portfolio.

Chart 3: Conventional (or vanilla) interest rate swap structure



Interest rate swap pricing and risks

The swap rate agreed at inception has a net present value (NPV) of zero or equal NPV between the fixed and floating legs. If the NPV were not equal, then the contract would not be a fair price for either side of the transaction. The swap rate – market parlance for the fixed rate in a swap transaction – is the rate which equates an equal NPV for fixed and floating legs. The swap rate is derived by discounting a series of market forward rates, such that a fixed rate can be implied with a series of floating legs, such as from a 3m Libor or SOFR curve shown in Chart 2. Interest rate futures can be used to imply parts of the swap curve, whereby a package or "strip" of futures are derived. Traditionally in the US market, Eurodollar futures contracts would be used to imply a series of forward 3m LIBOR rates (SOFR futures are now also traded). Variations exist in other markets, such as bank bill futures in Australia.

While a swap may start with an NPV of zero, the valuation changes immediately after entry as markets are constantly moving. The investor or borrower gains on the swap transaction in Chart 3 if market interest rates rise after entering a paid fixed position. More precisely, over time mark to market gains accrue in this example where swap rates rise by more than is factored into the forward interest rate curve at the time of entering the swap (the carry/roll section below discusses this aspect in more detail).

Speculators or swap traders focus on managing upside or downside risk to swap positions with various risk management techniques. We discussed in Part 1 of our primer series how a trader might measure risk in $ per bp or some other measure that allows the swap risk to be compared with other sources of interest rate risk in a portfolio or trading book. The depth and liquidity on offer in swap markets allows investors to create substantial interest risk positions in swaps without purchasing physical bond securities. An advantage of trading swaps to express views on the direction of interest rates is that they are not constrained by issuance and repo market funding conditions. Like bonds, there are also futures contracts that can be used to hedge or amplify positions in swaps – through futures on 3m rates (market customs differ – for example Eurodollar or SOFR contracts in USD, Euribor in EUR and Bank Bill futures in AUD).

An important point to note on the risk of swap trades is that notional face value does not represent the true level of risk exposure. For example, a $100M interest rate swap has a notional value of $100M, but this number does not consider two important characteristics of vanilla swaps:

- Neither party pays nor receives the notional value and therefore it is never directly at risk.
- The actual risk is determined by the combining the notional value with the 'duration' of the derivative and the volatility of the underlying interest rate it references. Duration measures the sensitivity of the derivative's value to changes in the underlying reference interest rate and is expressed in years. (In practice, there are other more precise valuation adjustments, but these go beyond the scope of this primer).

Consider the example in Table 1 of three different interest rate swaps, which each have the same notional value of $100M. The key takeaways:

- Despite all three swaps having the same notional value, the risk of loss for each is very different because it is heavily impacted by the duration of the swap.

- Even though a 1% move in the underlying interest rate would be considered very large in most interest rate markets, the loss is still only a small fraction of the notional value.
- The underlying interest rate would need to experience an unrealistic level of volatility for the loss to equal the notional value.

  For example, for a 10Y swap the underlying rate would need to move by +10%, for a 1Y swap by +100% and for a 1 month swap by +1300%.

Table 1: Comparison of notional value and duration in swaps

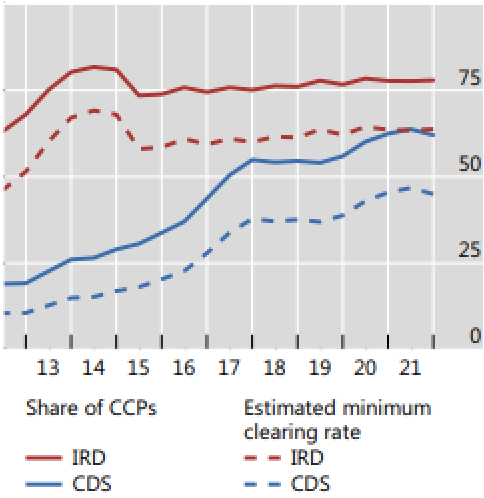
	10 Year Interest Rate Swap	**1 Year Interest Rate Swap**	**1 Month Interest Rate Swap**
Notional Value	$100,000,000	$100,000,000	$100,000,000
Impact of 1% adverse move in the underlying reference interest rate			
Loss Calculation	1% x 9.4Y duration x $100M	1% x 0.9Y duration x $100M	1% x 0.1Y duration x $100M
Dollar Loss	$9,400,000	$900,000	$100,000
Loss as % of notional value	9.4%	0.9%	0.1%

For participants using swaps for hedging, outright gains or losses on swap trades are less relevant than movements in the basis between swaps and the underlying asset or liability hedged. For example, swap positions used as a hedge against bond duration risk are exposed to movements in swap-bond spreads.

Beyond the market risk associated with swaps, there is counterparty risk to manage, just as there is with any derivative contract. Unlike a bond investor that effectively lends to a borrower, a swap is transacted between interest rate market participants, mostly between banks and either fund managers or corporate borrowers. Counterparty risk with derivatives came to the fore during the 2008 global financial crisis. Since then, regulations and market customs have shifted towards central clearing and collateral arrangements.

The counterparty risk of derivative trades differs for OTC derivatives compared with exchange-traded derivatives like futures. However, the ultimate risk-mitigation methods have become similar over the last decade. For exchange-traded derivatives such as futures, market participants face the exchange clearinghouse only. Positions are daily margined and settled with the clearinghouse. For OTC derivatives, fund managers implementing trades may face a bank counterparty or a central clearing counterparty. Regulators have increasingly mandated that many types of derivatives such as vanilla interest rate swaps are cleared through a central counterparty (CCP). This central counterparty makes the transaction less risky by standing between two sides of OTC derivative trades, effectively substituting the credit risk of a counterparty with that of the clearing house. BIS data shows that around three quarters of OTC interest rate derivatives are now centrally cleared (Chart 4).

Chart 4: Share of centrally cleared OTC derivatives (IRD = interest rate derivatives, CDS = credit default swaps)



Source: BIS

Even where swaps are bilaterally traded with a counterparty, counterparties often daily margin positions in line with legal agreements called Collateral Service Agreements (CSA). When facing central counterparties, swaps are also daily margined. This margining process reduces counterparty default risk to negligible levels. The market value of all derivative contracts is calculated daily and any exposure exceeding a pre-agreed margining threshold must be covered by cash transfers into a segregated margin account. This means that if one counterparty were to default, the other counterparty could access that cash to cover the exposures and the potential loss is limited to a pre-agreed threshold amount, often a small value.

Swap forwards and RV

It is typical for swap trades to be implemented in forward starting terms, which avoids the cash flow impact of rate sets at inception of the trade and makes use of the increased flexibility of swap contracts to trade or hedge a particular view or exposure. For example, a company might be planning a large project starting in 1 year to be funded through a 5 year bank loan or bond issuance. The company might be worried about rising rates and so could enter a forward starting swap agreement and pay a 1y forward 5y fixed swap rate today.

Table 2 illustrates a snapshot of the market for USD swaps (as of June 2022), with both spot and forward starting swap rates. These show typical tenors traded, but many more variations are possible. For example, macro-oriented funds trade 1y forward 1y swap to speculate on near term central bank policy changes or 5y forward 5y swap for broader duration views. Compared with physical bonds or futures, forward swaps are often preferred because of the lack of up-front funding cost, carry/rolldown considerations, liquidity (depending on tenor and market) and flexibility to trade a preferred sector of the curve.

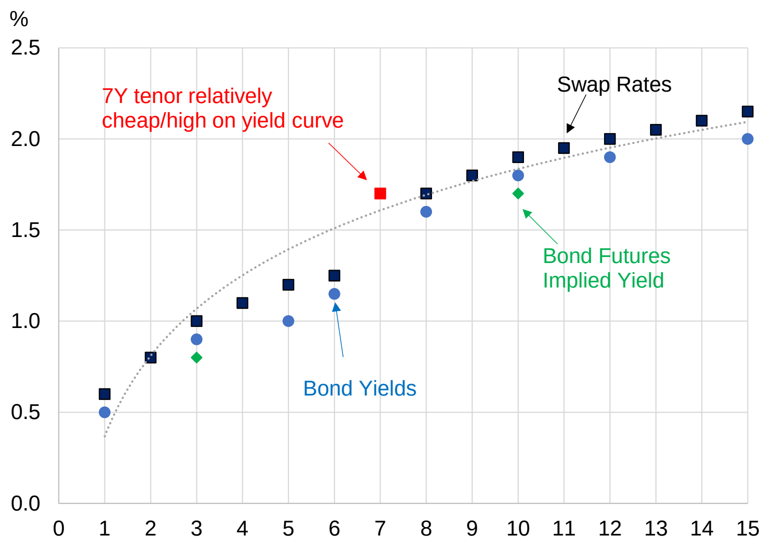
Table 2: USD forward swap curve matrix

		Forwards									
Tenors	Coupon	3Mo	6Mo	1Yr	2Yr	3Yr	4Yr	5Yr	10Yr	15Yr	30Yr
1Yr	3.3846	3.7892	3.8173	3.5841	3.1822	3.1186	3.1250	3.1378	3.4138	3.0117	1.6352
2Yr	3.4809	3.6122	3.5694	3.3862	3.1508	3.1218	3.1313	3.1422	3.4146	3.0117	1.6351
3Yr	3.3868	3.4674	3.4343	3.2992	3.1425	3.1269	3.1364	3.1435	3.4094	3.0144	1.6352
4Yr	3.3218	3.3846	3.3595	3.2577	3.1414	3.1317	3.1366	3.1617	3.4089	3.0118	1.6363
5Yr	3.2856	3.3360	3.3157	3.2351	3.1424	3.1344	3.1522	3.1917	3.4070	3.0109	1.6361
8Yr	3.2361	3.2714	3.2608	3.2123	3.1719	3.1975	3.2323	3.2672	3.2706	2.8112	1.6363
9Yr	3.2340	3.2685	3.2613	3.2231	3.1956	3.2190	3.2486	3.2810	3.2450	2.7737	1.6362
10Yr	3.2424	3.2753	3.2710	3.2397	3.2148	3.2346	3.2616	3.2912	3.2241	2.7431	1.6361
15Yr	3.2892	3.3074	3.2989	3.2658	3.2256	3.2182	3.2137	3.2116	2.9965	2.5702	1.5057
20Yr	3.2340	3.2437	3.2316	3.1942	3.1399	3.1104	3.0827	3.0564	2.8229	2.3687	1.4398
30Yr	3.0038	3.0049	2.9906	2.9524	2.8898	2.8456	2.8018	2.7588	2.5013	2.1049	1.3731

Source: Bloomberg

The flexibility offered by forward starting swaps is ideally suited to capturing RV opportunities. Consider this simplified hypothetical example in Chart 5, where the 7y point appears noticeably higher relative to a smoothed curve shape. This sort of anomaly in interest rate curves is common, often reflecting flows in the market and corrects over the space of weeks or months, making it an attractive candidate for an RV trade.

Chart 5: Hypothetical interest rate curve with a relatively cheap/elevated 7y rate



Source: Ardea

There are a few available strategies to capture this anomaly:

1) Buy the nearby bond outright or hedged relative to a short in 10y bond futures.

2) Enter a standard swap trade to receive the 7y rate outright or relative to a short in 10y bond futures.

3) Enter a forward starting swap package to capture just the anomaly at the 7y point.

Option 1) is sub-optimal. There is not a bond issued for every year in a uniform fashion across many global curves or a bond may exist but is less liquid. There is still a clear step-up in yield curve shape from 6y to the 8y point, but there may be limited capacity or additional cost to short the 6y bond. Hedging with 10y futures would improve the expression of the trade, with the addition of a slight amount of curve risk.

Option 2), whether hedged for duration risk with futures or not, will likely still benefit somewhat if the anomaly in the curve corrects, although it exposed to either duration risk if implemented on an outright basis or yield curve and swap-bond spread risk if hedged with 10y futures.

Option 3) involves a forward-starting swap package to optimally capture just the RV opportunity at the 7y point on the curve. An example is receiving the 6y forward 1y rate and paying the 5y forward 1y and 7y forward 1y rates. This trade has 3 legs to it and so is slightly more complex, but subject to some other considerations (such as volatility of the trading range in the combined position), could prove a better risk-reward alternative than options 1) or 2). Swap contracts are highly customizable and so offer the capacity for forward starts and maturities to target specific yield curve points.

There are many other practical considerations such as carry and rolldown, as well as more granular analysis of forward curves.

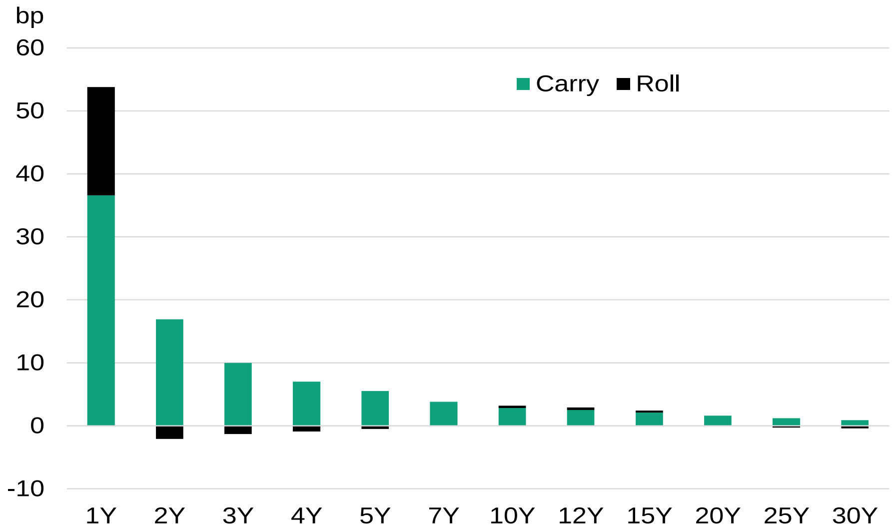
Swap carry and rolldown

The carry on any fixed income instrument is defined as its income net of financing cost. The carry concept allows investors to quantify the return on holding a bond or swap position if the market only moves by the amount priced into the forward curve. In other words, a carry calculation allows an investor to:

- figure out a total return potential of a trade by adding the carry to the expected price/yield movement; and
- estimate a total breakeven level for the profit and loss of the trade at the time of entry.

The estimation of carry varies by type of interest rate market instrument. In Part 2, we showed how the repo market for bonds allows for an estimate of forward yields and therefore the carry of a bond. In swaps, the carry and related concept of rolldown doesn't require a repo funding estimate for forward rates. A technical distinction with swaps is that carry plus rolldown is only relevant for spot starting swaps, while only rolldown is relevant for forward starting swaps. The floating rate set is only known at inception of a trade in a spot swap transaction. Rolldown assumes the curve remains static and the passage of time sees the swap roll down a curve (assuming a curve is upward sloping). Chart 6 shows the current (as of June 2022) carry and roll across the US swap curve, assuming a received swap (long position). At the time of writing, the market is pricing an aggressive front-loading of Fed rate hikes such that rates are priced to jump sharply over the next one to two years and then plateau thereafter. The 1y carry and roll is high by the standards of recent years.

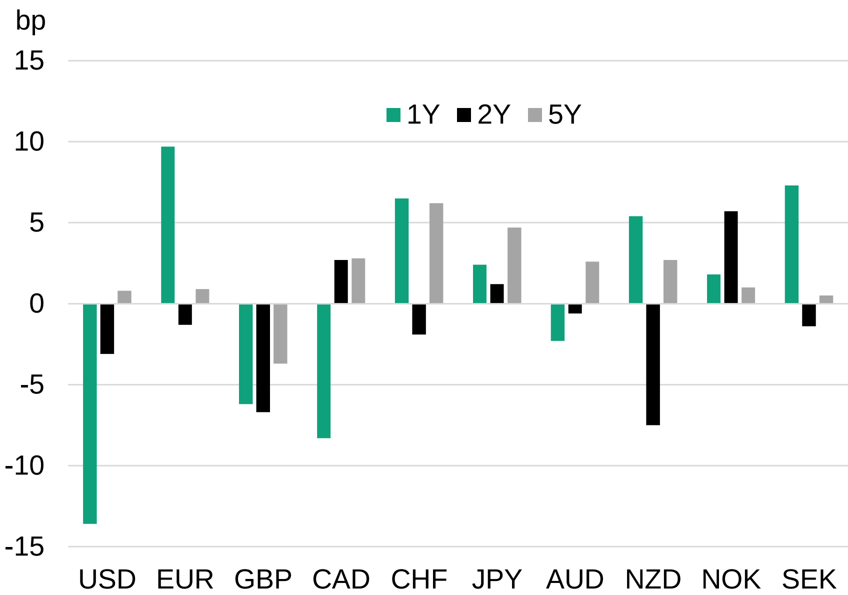
Chart 6: Carry and rolldown in US swaps (3m horizon)



Source: Ardea, Bloomberg

Many swap trading strategies are implemented on a forward starting basis and involve comparing rolldown across markets as an input to the decision process. Chart 7 shows an example of cross-market forward rolldown analysis across G10 markets for 1y forward 1y, 2y and 5y tenors. The prevalence of negative roll in forward swaps for received positions (positive roll for paying swap) at the time of writing reflects the tendency for curves to invert beyond 1y with many markets priced for peaks in cash rates over the coming year.

Chart 7: G10 markets 3m forward rolldown for 1y swaps, starting in 1y, 2y and 5y



Source: Ardea, Bloomberg

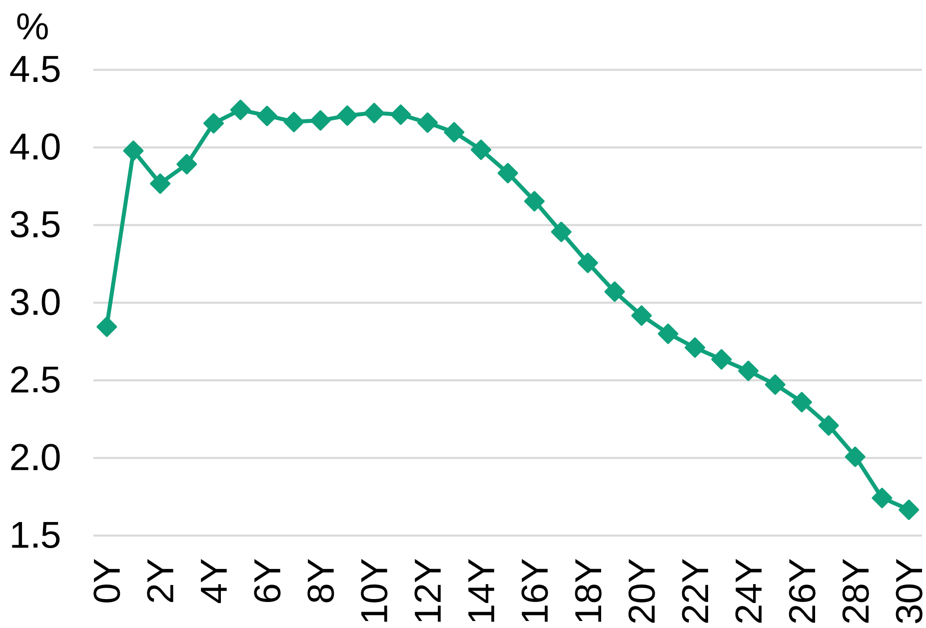
As we have discussed in prior notes, there is a major risk with implementing carry or rolldown oriented strategies – these could result in substantial capital losses if the market moves unfavourably. For example, while Chart 6 shows the highest carry is at the front end of the US curve, at the time of writing the Fed is in the midst of an aggressive, front-loading hiking cycle. While these carry numbers look like an attractive buffer for being received the front end of swap curves, if macro developments such as inflation caused markets to price even more tightening in, then these carry strategies would incur losses. It is useful to adjust carry estimates for realised and expected volatility. In the case of RV trades, multiple legs are typically implemented to reduce the correlation with outright market movements, while carry and rolldown is a tool to estimate the cost of holding a trade while waiting for an RV anomaly to correct.

RV analysis of swap curves

In our last primer, we showed how swap curves can be used as an RV tool for bonds since the existence of forward starting trades and lack of constraints on funding and issuance make for smoother curves. However, that general observation does not mean that swap curves can't also become distorted. Just like bond markets, central bank policy expectations, general uncertainty over future rate paths, large hedging and speculative flows in swaps give rise to swap RV opportunities.

There are many techniques for analysing swap curves for relative value. A simple, but effective starting point is to visualise the path of forward rates – such as cash, 3m or 1y – to identify where particular sectors standout from the broader shape of the curve. Chart 8 illustrates current 1y forward rates across the AUD curve.

Chart 8: AUD 1y Forward Curve

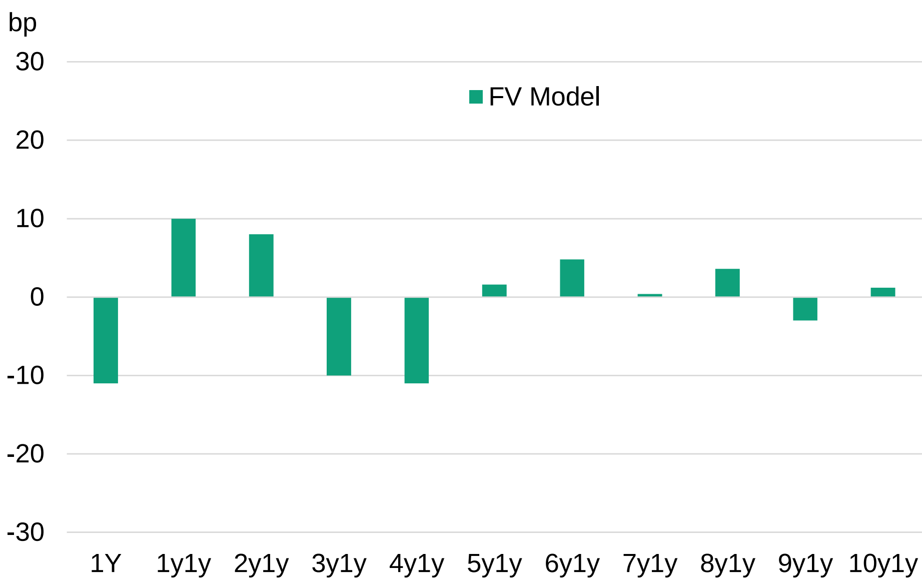


What to look for depends on the goals of the user of this chart and should be supported by other analysis. For example, in a more macro-oriented strategy where an investor has a view that the AUD market is cheap or is likely to outperform, RV analysis might be just trying to identify where on the curve to implement that view. Therefore, this chart, along with roll-down analysis, can help identify an attractive point on the curve. For a more micro style of RV, there is a greater emphasis on constrained relationships and so RV might instead focus on a particular forward point that appears optically high or low compared with another point. This chart alone would often not be enough for micro RV but could provide a starting point for where to look. For example, the 5y forward 1y swap is high relative to nearby maturities. At the long end sector, the 20y sector is sharply downward sloping. Determining what impacts these curve shape variations involves qualitative analysis as well – for example, hedging flows from investors paying swap might explain the 5y point being cheaper and structured note issuance might explain the lower long end sector.

Quantitative models also feature heavily in swap RV analysis. There are a range of models that can be applied to swap or bond curves and a detailed review of these techniques goes beyond the scope of this note. The basic premise is to fit a fair value curve based on a set of constraints over curve shape and apply the model to the market on a high frequency basis. The spread between observed swap rates and the model implies a rich or cheap point on the curve, which can be further scrutinised by other statistical analysis (such as z-scores).

Chart 9 shows the output of one type of fair value model for 1y forward CAD swaps early in 2022. There are cheap points in 1-2y and 7-10y, while 3-5y rates are rich. Some possible underlying drivers of these discrepancies are levered traders stopping out of received positions, shifting mortgage hedging flows and asset swapping of bond positions. Taken in isolation, these variations from a model may not revert to fair value in a hurry and so further examination of the history of the fair value result, the drivers and comparison with other measures are usually required.

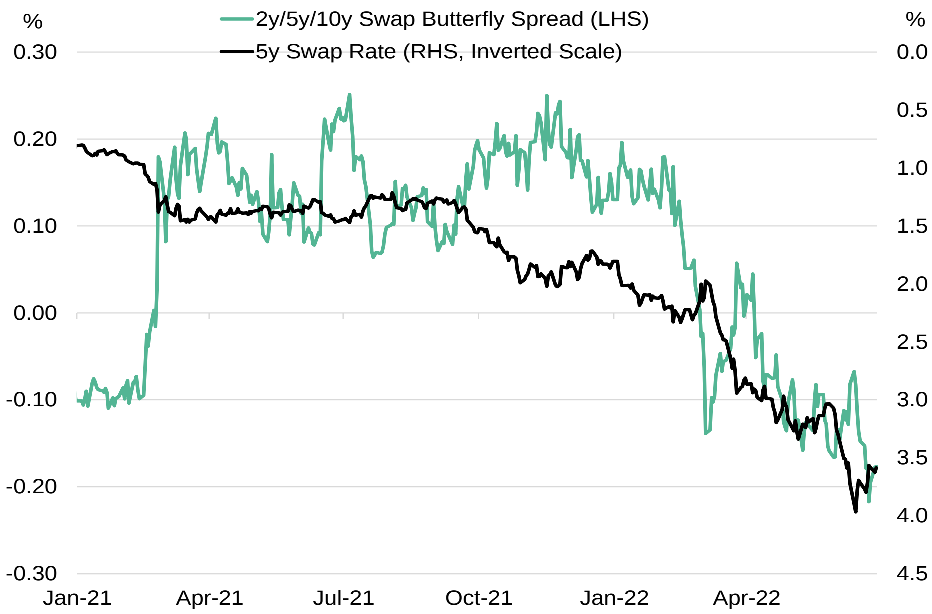
Chart 9: CAD swap curve vs fair value model



Source: Ardea, Bloomberg

Capturing this trade could involve a combination of received and pay positions such as a “butterfly trade” (outlined in Part 1). Many investors approach this situation in a less precise way and pay 5y swap, while receiving 2y and 10y rates to broadly capture the RV. These are common points on the curve for butterfly trades. However, as Chart 10 shows, there is a significant downside risk to this approach, which is that this type of trade can be highly directional with the outright movement in 5y rates. The higher rates regime has become inversely correlated with this popular style of butterfly trade, so any RV benefit becomes swamped with macro style risk.

Chart 10: CAD swaps – pickup for paying 5y and receiving 2y and 10y vs 5y outright rate



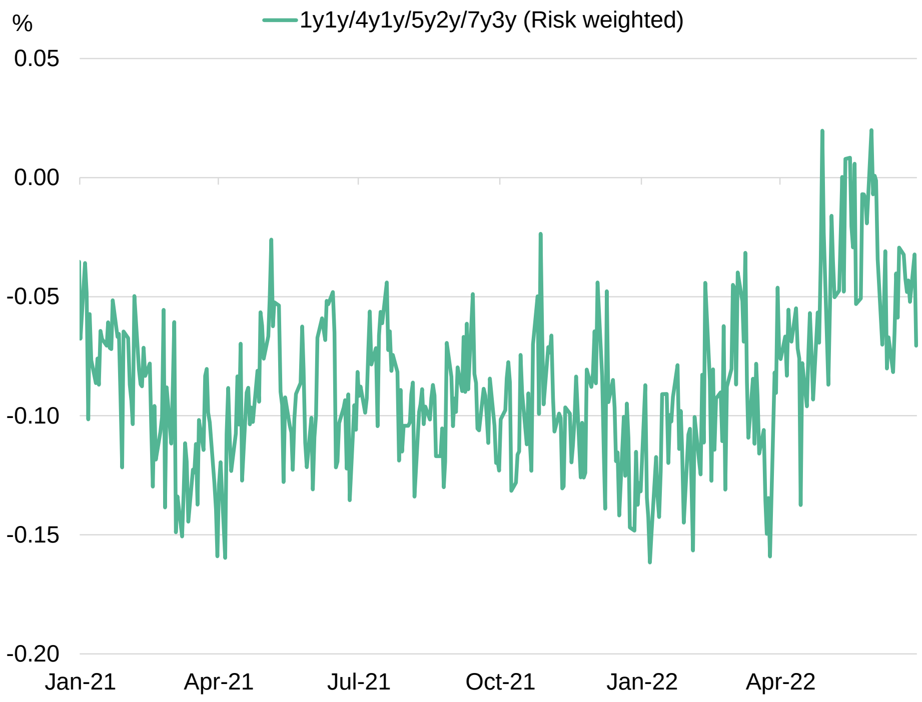
A more precise RV approach involves further analysis of the curve to target specific points in a less directional way. For example, a "box" style trade with four legs, targeting the respective rich and cheap points shown in Chart 9 with forward starting swaps. Furthermore, rather than an equal weighted sizing on the individual legs of the trade (as in the conventional 2y/5y/10y butterfly), an RV trader might also make use of additional quantitative techniques to optimise a for:

- time for reversion to fair value;
- the minimum overall risk or volatility of the trade; and
- a low correlation with macro style level and curve shifts.

This further quantitative analysis can give rise to a new structure for an RV trade. Chart 11 shows this new suggested trade appears more constrained. The overall trading range has more than halved - from around 45bp to 20bp – implying less risk (but also less potential gain - assuming a trader is fortunate enough to time the absolute high and low of the range).

Note that reweighting trades in this way is also still exposed to risk, albeit a less obviously macro style of risk than the example in Chart 10. The assumed volatilities and correlations in the models that drive these risk-weights are still subject to large regime changes in markets that can cause relative volatilities in different parts of the curve to also change. However, the period shown in these charts is one of very high macro volatility and so the fact the RV structure shown in Chart 11 has remained fairly range-bound highlights the benefits of a more quantitative approach to RV.

Chart 11: Constrained box trade example – CAD Swap Rates



A more detailed description of these more advanced quantitative analysis techniques goes beyond the scope of this primer. We simply note that some market participants prefer to use bespoke models or variations of other common techniques, such as Principal Component Analysis (PCA). The PCA analysis is essentially a statistical technique to reduce dimensions of a problem. In swaps, this often involves breaking a movement in the curve down to level, slope and curvature (broadly defined in Part 1). Variations beyond these three factors could be considered RV mis-pricings, where PCA factors could be further used to provide information on risk weightings for long and short positions.

Basis swaps

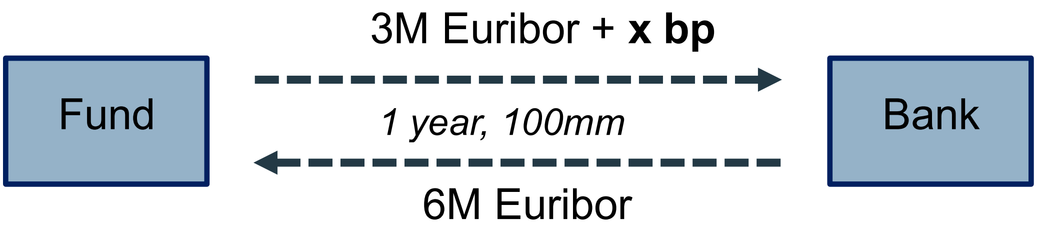
This primer has focused on the more common fixed-floating vanilla swaps, but there are many other types of swaps with similar uses for hedging and speculation. The RV analysis discussed in this note can also be applied to these swap curves. Two further examples of commonly traded swaps are forms of basis swaps – 3m vs 6m domestic basis and cross-currency basis. In both of these swaps, key differences with conventional swaps are:

- counterparties exchange interest rate payments based on two floating rates instead of a fixed and floating rate; and
- movements in these basis swap rates have less to do with conventional macro drivers of swap rates and are instead dominated by flows.

Example 1: 3m vs 6m tenor basis

The first example, referred to as tenor basis (or a type of domestic basis), is a swap where two counterparties exchange floating rates, traditionally based on LIBOR (or BBSW in Australia) rates. A common form of these swaps is 3m vs 6m. Basically, this swap exists because of rigidities in the market such that a compounded shorter tenor floating rate can be either less than or greater than a longer tenor floating rate. Chart 12 shows the structure of a swap, whereby Xbp represents the basis spread for a given tenor – in this example 1 year.

Chart 12: 3m vs 6m basis swap structure

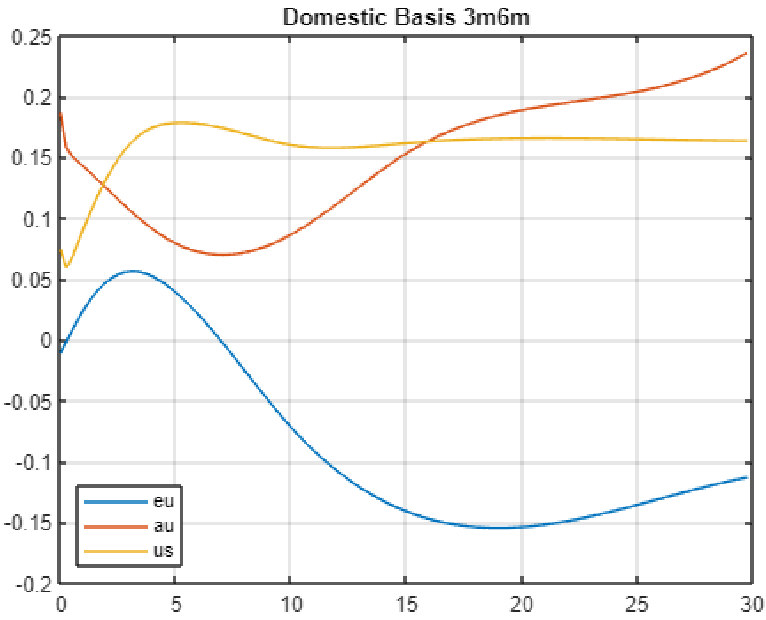


These swaps give rise to opportunities to trade themes that have a lower correlation to outright rate movements and so offer a diversified source of returns. Some of the key drivers of 3m vs 6m basis spreads are:

- Credit risk premium (less of an issue now than in 2008).
- Money market issuance and related regulatory factors.
- Investor and hedger tenor preferences.
- Volume of swapped new issuance (3m versus 6m).
- Banks hedging their tenor basis risk from balance sheet exposures.
- Market customs leading to segmented curves.
- Monetary policy expectations leading to shifts in hedging flows.

The drivers of these spreads can be idiosyncratic and vary depending on the market. Chart 13 shows the current 3m vs 6m basis curve shapes for AUD, EUR and USD markets. The variations in level and curve reflect the respective differences in flows and market structure.

Chart 13: 3m vs 6m basis curves

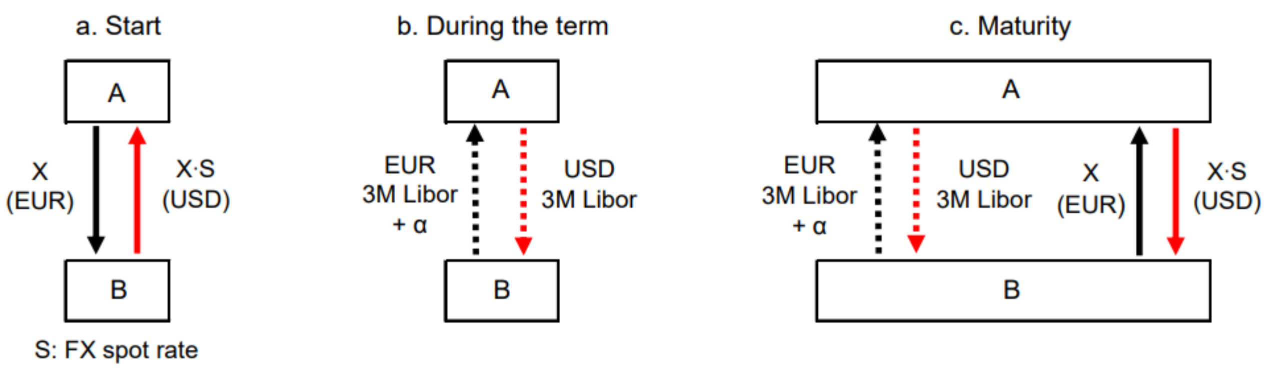


Source: Ardea

Example 2: Cross currency basis swap

A cross-currency basis swap allows investors to swap interest payments in one currency for another. These are also a floating vs floating type of swap – for example a 3m Euribor or AUD BBSW rate can be swapped for a USD 3m (Libor or SOFR) rate. To facilitate this swap of interest rate payments in different currencies, the counterparties exchange principals at the start and maturity of the swap. The typical structure is shown in Chart 14, where α is the basis or price of the swap agreed upfront. The funding aspects of the trade are similar to FX swaps, which also have a basis component (some discussion of these short term market dynamics from 2018 here), although cross-currency basis swaps also have floating legs.

Chart 14: Structure of a cross-currency basis swap*



*Source: BIS (note that while alternative rates like SOFR may now be used in place of LIBOR in such swaps, the basic structure of the transaction is the same).

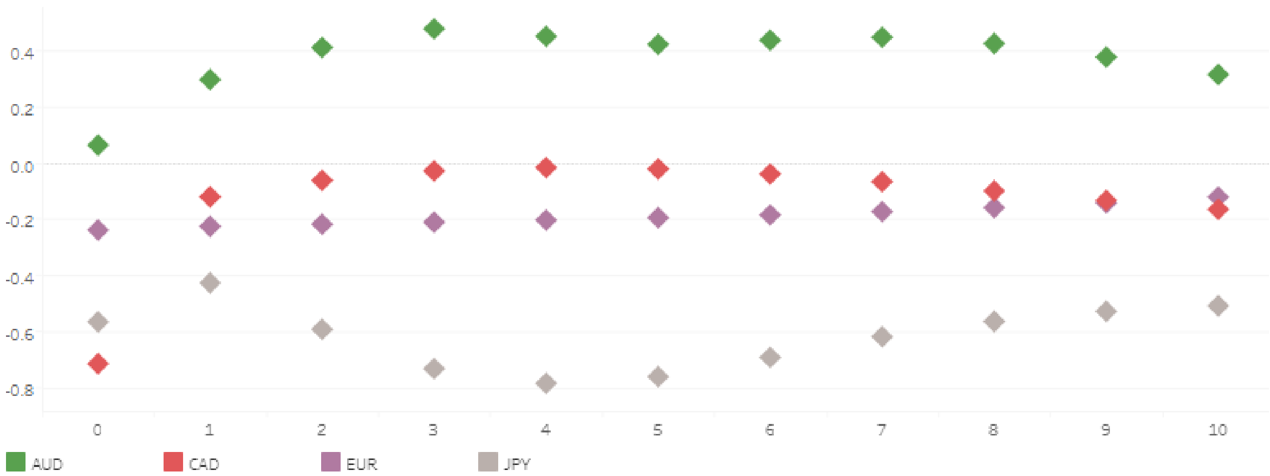
Similar to domestic basis swaps, cross-currency swaps allow investors to trade themes with lower correlation to outright moves in most circumstances. While cross-currency basis spreads tend exhibit much lower volatility than swap rate or bond yield levels, large moves have been seen historically in periods of crisis and other major market regime changes.

Typical drivers of basis spreads are:

- Hedging of offshore assets.
- Issuance flows.
- Offshore borrowing by banks or other corporations.
- Money market liquidity conditions (most relevant for front end of the curve).
- Structured product flows.
- Speculative trading.
- Credit conditions (large risk-off moves reduce likelihood of issuance and in past periods had a direct impact on cross-currency basis through LIBOR spreads).

The largest flows in the market tend to be hedging of bond issuance and offshore assets. Knowledge and understanding of the drivers of these flows is important for trading cross currency basis. Chart 15 shows global basis curves, where cross-currency curves have been rebased to OIS to remove the additional floating reference rate basis to OIS implicit in some curves. What is left is the basis margin that results from the supply/demand for funding and hedging of different currencies. The drivers and composition of flow varies depending on market. For example, a typical result is that AUD basis is persistently higher and positive out to 10 years as Aussie banks engage in large offshore wholesale funding (paying the AUD basis to hedge) which exceeds receiving flows such as from offshore issuers into the AUD market (so called Kangaroo issuance).

Chart 15: Global cross-currency basis 1y forward spreads (to OIS)



Source: Ardea