CCBS Catalogue

.....

Markets

Contents

- Recent development in cross currency basis swap (CCBS) market
- Understanding the CCBS market

Part I: Recent development in CCBS market

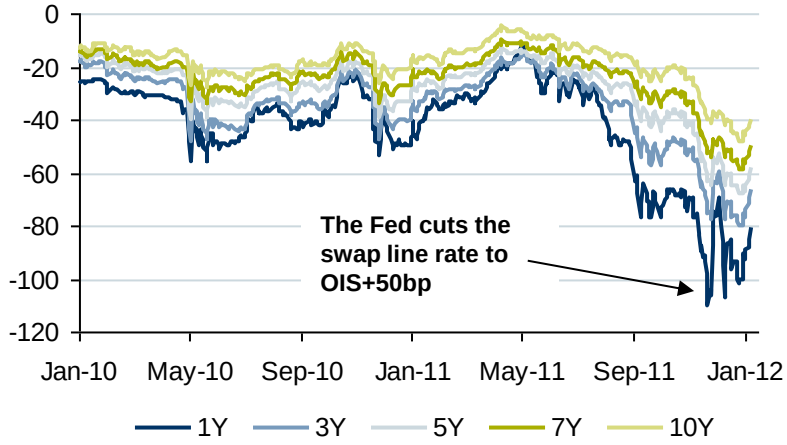
Executive summary

- As the coalition of central banks took initiatives to make the USD swap line more attractive, USD cross currency basis spreads softened in general significantly.
- Since then, volatility has increased and spreads have developed in line with risk sentiment.
- The EURUSD CCBS spread is a relatively game on the scarcity of liquidity.
- USDSEK CCBS is still well bid but have lost momentum recently, partly due to higher Swedish credit premiums.
- Despite lower NOK credit premiums (compared to US), USDNOK CCBS spreads have widened due to higher USD liquidity preferences. Moreover, the term structure has steepened.
- USDDKK CCBS spreads have shown some resistance to the rising USD preferences as Denmark has gained status as a safe-haven alternative.
- Issuance activity tend to support Scandi-currencies' basis spreads in upward direction.

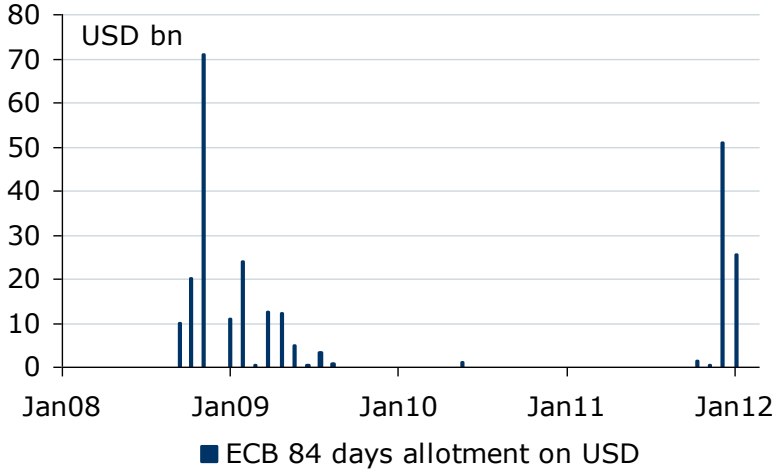
EURUSD

- Since the coalition of central banks announced actions aimed at making the Fed's temporary USD swap line more attractive (50bp rate cut to OIS+50bp), CCBS spreads against the USD have been quite volatile. Overall the spreads have tightened.
- Fluctuating risk sentiment and year turn effects is in play. Nevertheless, the primary driver is judged to be a game of relative scarcity of liquidity, EUR vs. USD.
  - The massive allotment at the 3Y LTRO EUR liquidity operation in December (EUR 489bn), increases even more the abundance of EUR liquidity.
  - The ECB has loosened collateral rules, making the ECB's market operations attainable for more European banks.
  - The USD facility turning from being virtually unused to being tapped significantly. This lowers the pressure for receiving USD in basis market, pushing up the EURUSD basis spread.
- Minutes from the FOMC December meeting suggests that the Fed will be even more dovish on the Fed funds target.
- In general, the issuance flow support EUR basis as a lot of European firms issue in USD, cf. page 9. At least the covered issues are swapped back through the basis market, increasing the demand for EUR.
- The large amount of (non-covered) issuances by e.g. supranationals during the first weeks of 2012 might have supported the recent EURUSD basis spread narrowing. This is likely to continue.

EURUSD CCBS spot spread (bp)



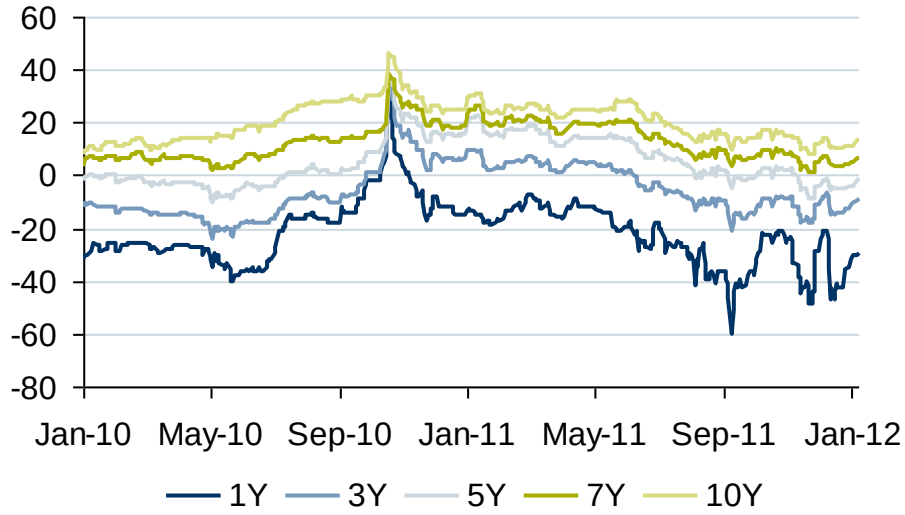
ECB USD liquidity facility gaining interest again



USDSEK

- The Swedish economy is losing momentum and tensions rise
  - Domestic data such as private consumption, retail sales, NIER surveys, and industrial production have been on the weak side
  - The Riksbank cut the repo rate on December 20 and is expected to deliver a series of cuts going forward
  - The stress in money market indicators such as FRA/OIS have picked-up notably as Stibor fixings remain elevated
- This translates into higher Swedish credit premiums, both relatively to USD and EUR, as seen from November 2011.
- SEKUSD CCBS spreads have thus tightened less than EURUSD spreads, i.e. EURSEK CCBS spreads have moved a bit down from its record levels, predominantly in the short end.
- However, the USDSEK CCBS spread is still well bid and not very far away from Oct-10 highs where the Riksbank caused a short-term SEK funding squeeze.
- In general, large amounts of USD denominated issues by Swedish firms, cf. page 9. This structural flow will tend to support the SEK basis in upward direction.
- SEK basis market less liquid than EURUSD.

USDSEK CCBS spot spread (bp)

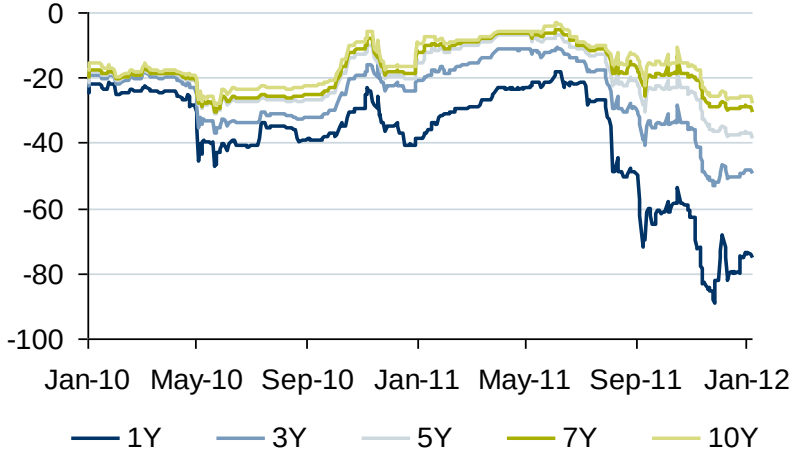


USDNOK

- NOK basis against USD is an example of the dynamics when risk aversion transpires
  - Spreads turn significantly wider
  - Term structures steepen
- Measured by tenor basis spreads, NOK credit premiums rose in Sep-11, but have since then stabilized and actually decreased relatively to USD credit premiums.
  - This has partly been driven by softer money markets with lower NIBOR fixings in the aftermath of the Norges Bank rate cut in mid-Dec.
- Thus, the USDNOK CCBS spread widening has been driven by stronger liquidity preferences with respect to the greenback.
- In general, large amounts of USD denominated issues by Norwegian firms (cf. page 9) tend to floor USDNOK CCBS spread.
- With respect to liquidity, NOK basis market is close to the corresponding in SEK.

NOK credit premiums decreased relatively to USD since Sept.

USDNOK CCBS spot spread (bp)

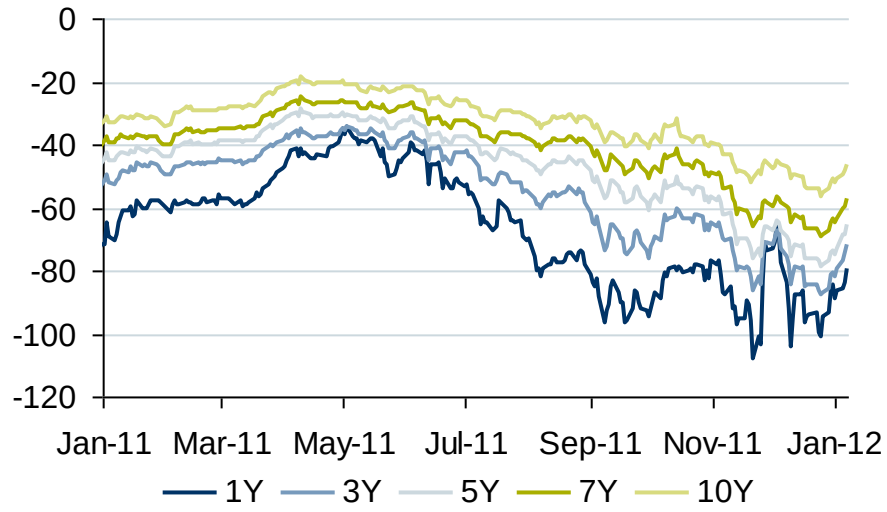


Markets

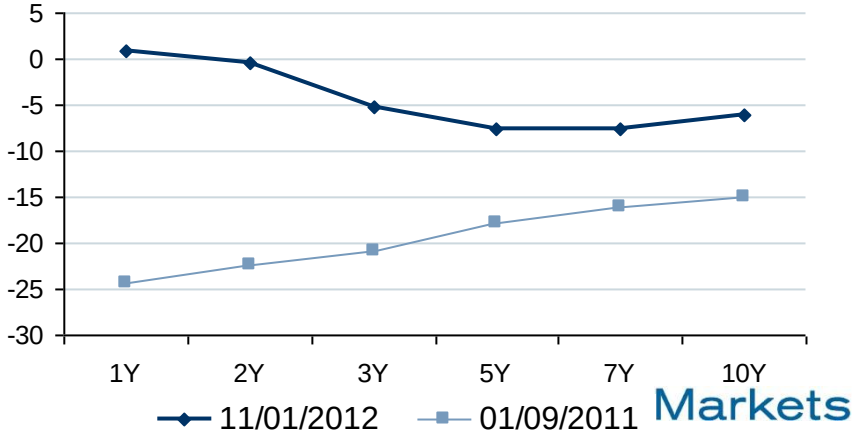
USDDKK

- In line with Denmark being increasingly priced as safe haven and, as a result, a Danish Krone strengthening to record levels, DKK CCBS spreads have shown a degree of resistance against the USD.
- The resistance is most clearly reflected in soaring EURDKK basis spreads: Short tenor spreads changing signs and the term structure is turning inverse.
- USDDKK basis spreads are still on extreme lows, and the term structure is rather flat.
- No covered issues between DKK and USD. Some non-covered issues in USD by Danish issuers, cf. page 9.
- Contrary to covered issues, these will not necessarily be basis swapped back to domestic currency and their effect on the DKK basis spread is thus uncertain.
- DKK basis swap market less liquid than SEK and NOK.

USDDKK CCBS spot spread (bp)



DKK strength clear in EURDKK CCBS curve development



Issuance activity – covered and non-covered

Country	Currency	Covered Issuances			
		2010	2011	2012	2010+2011
Eurozone	USD	7,300	4,500	0	11,800
US	EUR	0	0	0	0
Sweden	USD	1,600	6,000	0	7,600
US	SEK	0	0	0	0
Norway	USD	3,500	3,250	0	6,750
US	NOK	0	0	166	0
Denmark	USD	0	0	0	0
US	DKK	0	0	0	0

Country	Currency	Non-covered Issuances			
		2010	2011	2012	2010+2011
Eurozone	USD	188,805	184,695	7,900	373,500
US	EUR	27,798	15,733	0	43,530
Sweden	USD	9,350	9,200	0	18,550
US	SEK	598	540	0	1,138
Norway	USD	7,550	7,175	0	14,725
US	NOK	291	432	166	723
Denmark	USD	7,265	6,650	0	13,915
US	DKK	0	0	0	0

All issuances in USD. Source: Bond Rader.

Part II: Understanding the CCBS market

Agenda

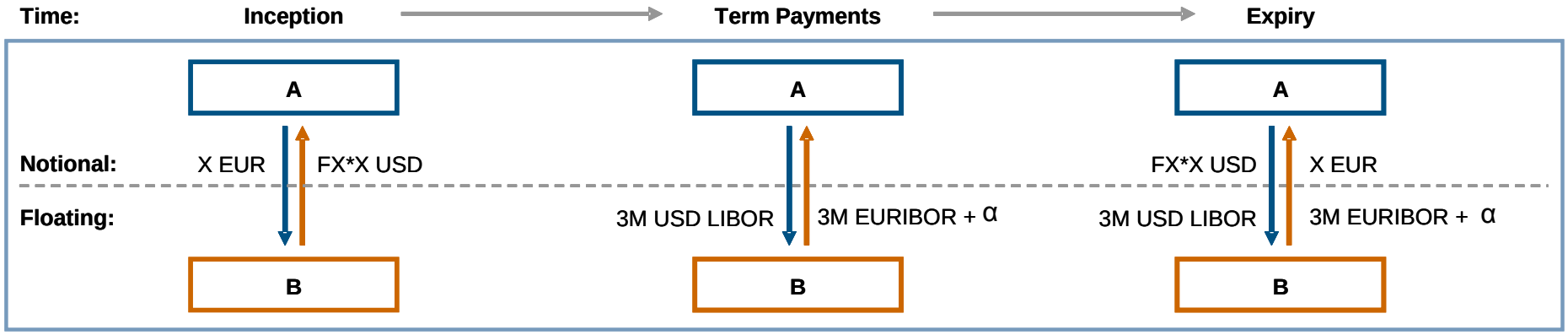
- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

Agenda

- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

Fundamentals (1)

- A CCBS is a swap of two floating streams in different currencies
  - The standard market practice is to base the floating legs on 3M fixing curves. Maturities are from 3M to 30Y
  - The 'price' of a CCBS is given by a spread, α, which is fixed at inception and placed at every term payment in the swap.



- Due to liquidity conditions, any CCBS is typically constructed through minimum one CCBS involving the USD.
  - Thus, for a non-USD CCBS, say EURDKK, it will typically be build by two separate CCBS', i.e. one EURUSD CCBS and one USDDKK CCBS.
  - For this reason, quotes are given relative to the liquidity reference USD LIBOR 3M, i.e. the CCBS spread is by convention given as USD 3M Libor flat vs. e.g. 3M EURIBOR + α.
  - Alternatively, in a EURYYY CCBS, it will be against EURIBOR 3M.

Fundamentals (2)

- In a spot starting CCBS, the exchange rate is identical at inception and expiry. Thus, in a stand-alone CCBS, FX risk is present.
- In a forward starting CCBS, a MtM approach is taken as FX rate is reset at end of fwd period, i.e. no FX risk in this period.
- Credit and liquidity risks enter due to the notional exchange

Appetizer for understanding the CCBS spread

- α is almost always negative relative to the liquidity reference USD or EUR as:
  - Typically, if B can fund USD loans at USD 3M Libor flat, he will be able to fund EUR loans at Euribor 3M flat as well.
  - Then, if only A has access to Euribor 3M flat funding, then for B to have an incentive to enter the CCBS above, the USD 3M Libor payments should be swapped to EURIBOR 3M + α payments, only if α < 0.
  - A's indirect USD funding costs is **USD Libor – α**, whereas B exploits its comparative (multi-currency) advantage.
- The spread is added in order to initiate the contract at zero-value, such that

"EUR Floating leg" = "USD Floating leg"

$$PV^{EUR}\left(\sum_{i=1}^{n} E_t^{EUR}\left[L^{EUR}(n-1,n)+\alpha\right]\right) = PV^{USD}\left(\sum_{i=1}^{n} E_t^{USD}\left[L^{USD}(n-1,n)\right]\right)$$

The present value of the EUR leg, discounted with EUR rates does not anymore equal the present value of the USD leg, discounted with USD rates.

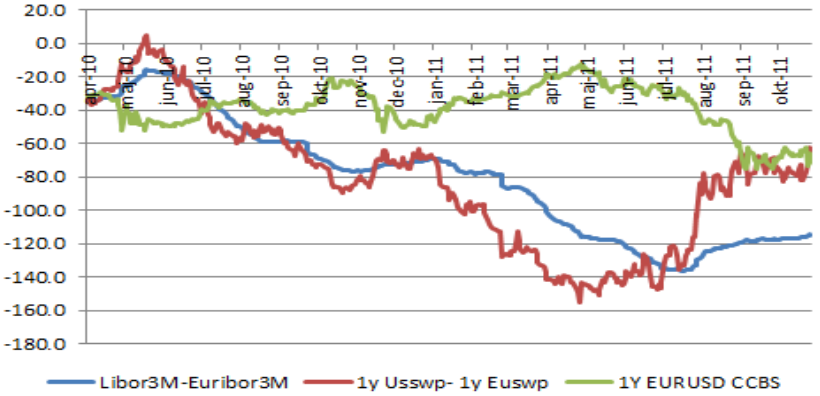
Agenda

- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
  - Liquidity and credit premiums
  - Breakdown of the CCBS spread
  - Interrelation between CCBS and TBS
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

The CCBS spread reflects liquidity and credit premiums

- Differences in levels and slopes of the respective (forward) Libor curves have **no direct** bearing on the basis spread.
  - Otherwise, there would be no reason for spreads being virtually zero pre-credit crisis
  - In the absence of credit and liquidity risk premiums, both floating legs in the swap will trade at par: Divergent discount factors negates Libor differences.
- The relative steepness between the two term structures will however have **indirect** effects.
  - Steepening/flattening of term structures may be due to credit concerns and as such represent changing credit premiums.
  - Steepening/flattening of term structures may be due to altered liquidity preferences, potentially affecting issuance behavior and thus supply/demand in the basis market. This would affect CCBS spreads as well.[1]

CCBS spread and rate differences

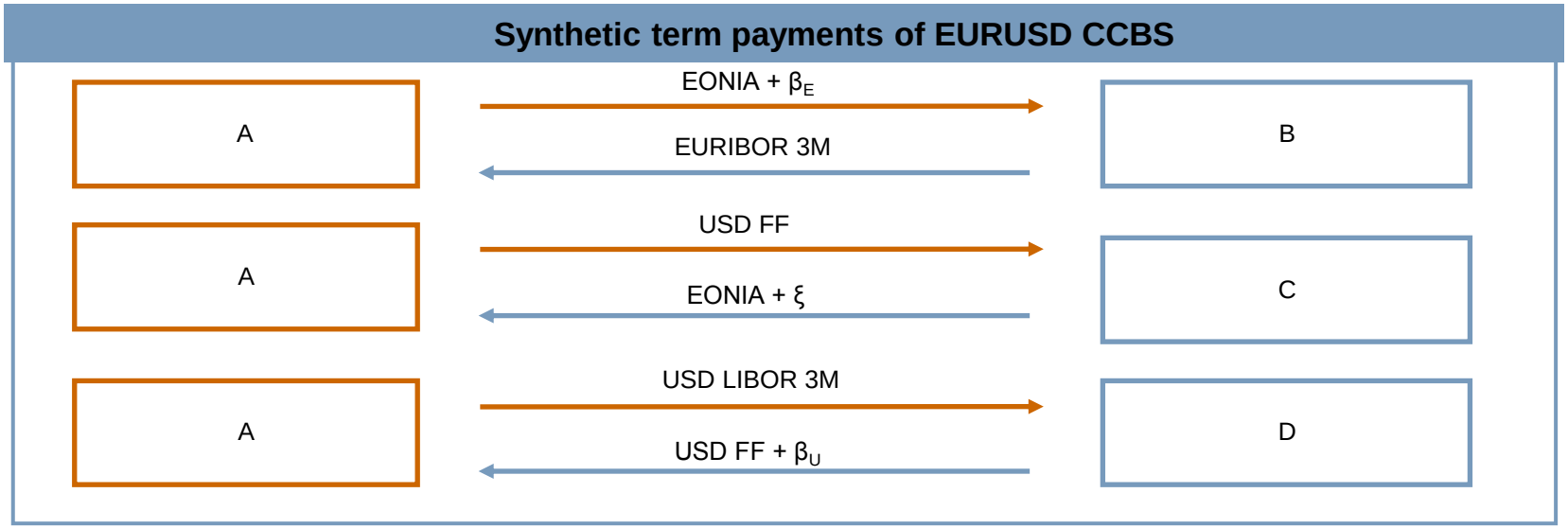


Markets

[1]:Issuances' effect on CCBS spreads is examined later.

Breakdown of the CCBS spread

- In order to separate the sub-components of the spread, the following is useful:



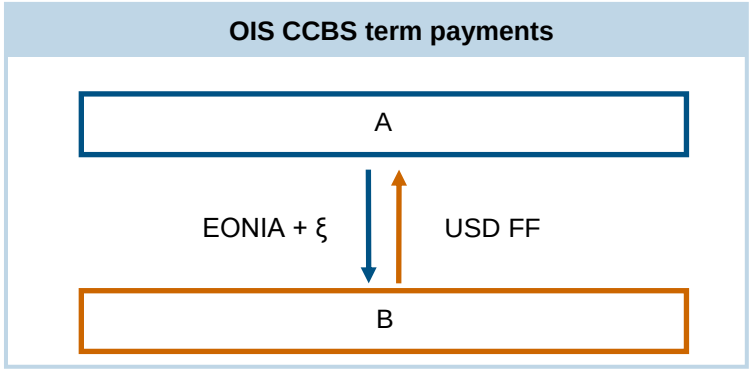
- In the transaction series above, A receives EURIBOR 3M on EUR collateral vs. ultimately paying USD LIBOR, replicating the cash flow of a standard EURUSD CCBS.
- It is accomplished by paying the premium (β_E) in a EUR tenor basis swap, receiving the OIS cross currency basis spread (ξ), and finally, receiving the premium (β_U) in a US tenor basis swap.
- Following from a no-arbitrage argument, $\alpha \approx \xi + \beta_U - \beta_E$

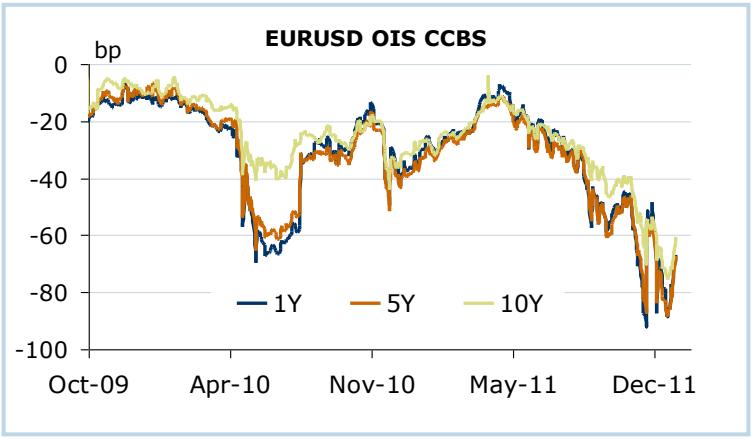
Current pricing	
1Y OIS swap (EONIA vs. FF), ξ	-69bp
1Y USD tenor basis, β_U	50bp
1Y EUR tenor basis, β_E	68bp
Implied 1Y α	**-87bp**
Traded 1Y EURUSD CCBS	**-88bp**

Markets

Breakdown of the CCBS spread: The OIS CCBS

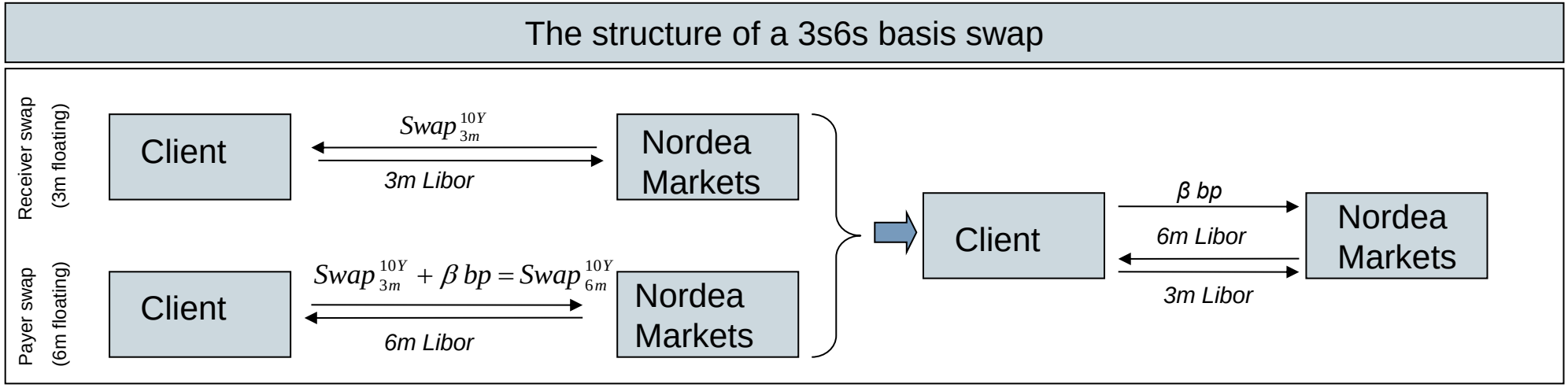
- The OIS cross currency basis (e.g. EONIA vs. FF) is the “cleanest” indicator of the premium investors are willing to pay in order to obtain liquidity in one currency relatively to another
- As a result, it signals a fundamental structural demand for one currency instead of another
  - Is either positive or negative
  - Does not relate to the difference in rates





Breakdown of the CCBS spread: Introducing the Tenor Basis Swap (TBS)

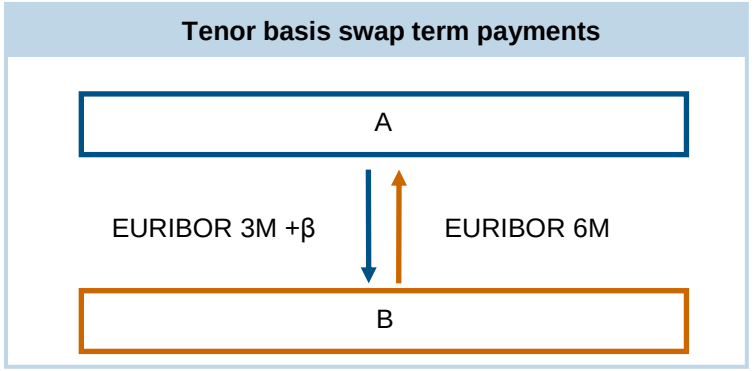
- A TBS is equivalent to two single-currency vanilla swaps with different fixing references
  - OIS, 1s, 3s, 6s, 12s can (in principle) be combined
  - Maturities from 1Y to 30Y (possibly longer). Short maturities most liquid.
  - Below, the structure of a TBS – with the effective swap to the right
  - β is defined as the ***tenor basis swap spread***

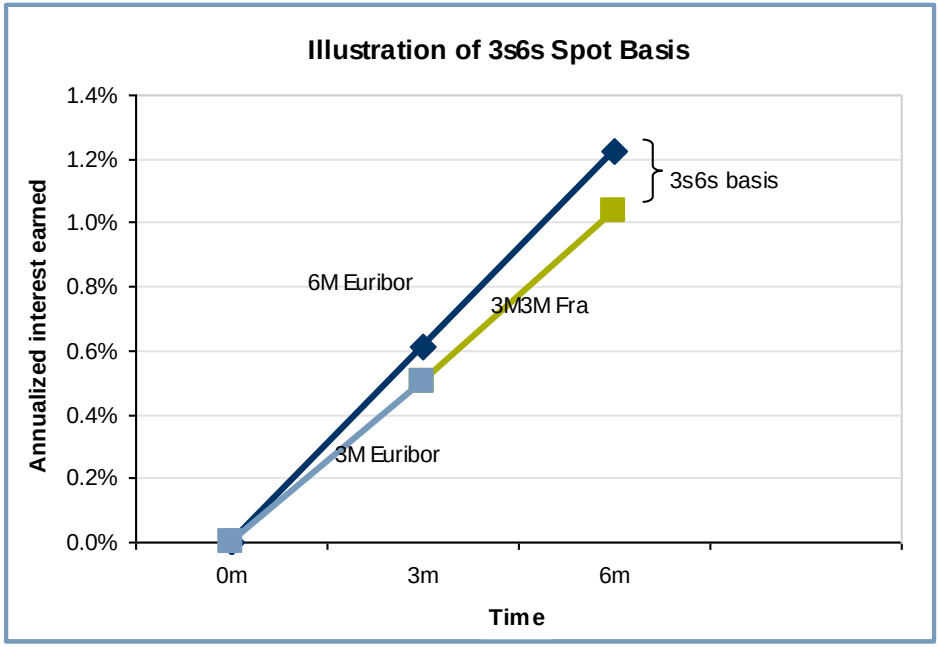


Markets

Breakdown of the CCBS spread: The TBS spread

- Convention-wise, the tenor basis swap spread is quoted on the side with the smallest tenor.
- Consider a 3s vs. 6s TBS. The 3s6s basis is the difference between an investment in the 6m Libor rate and an equivalent investment in the 3m Libor rate subsequently rolled at the 3m3m forward rate.
- Hence, the 3s6s basis is not determined by the difference in the 3m fixing and the 6m fixing (the steepness of the curve).
- Finance text books would argue that, absent of arbitrage opportunities, this spread should be zero.
- In practice it is not, as the 6m leg is considered more risky, suggesting a positive spread to the 3m leg. This basis spread reflects inherent credit risk and liquidity risk.
- As such, it expands when credit worries are growing and liquidity disappears.

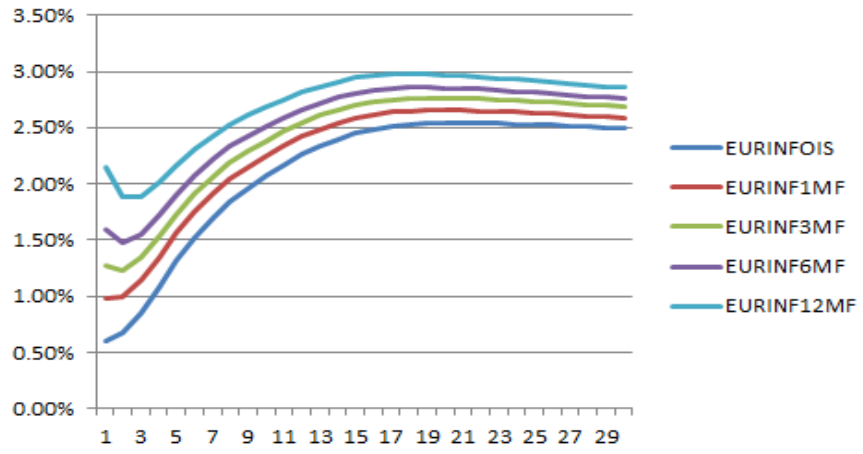


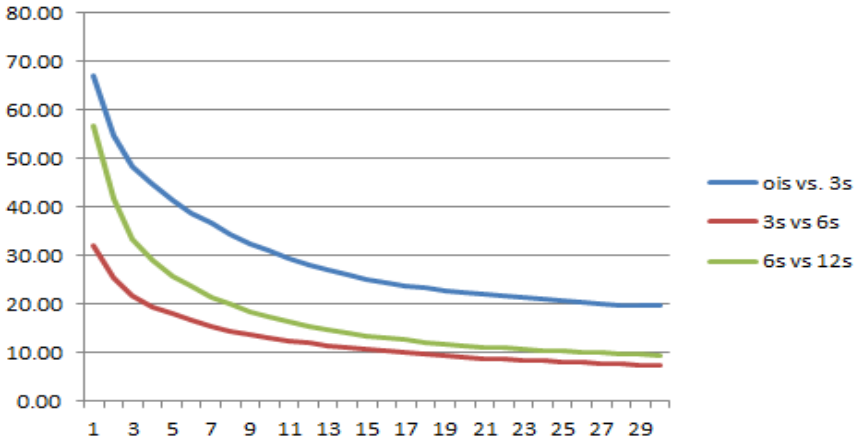


Markets

Breakdown of the CCBS spread: The TBS spread

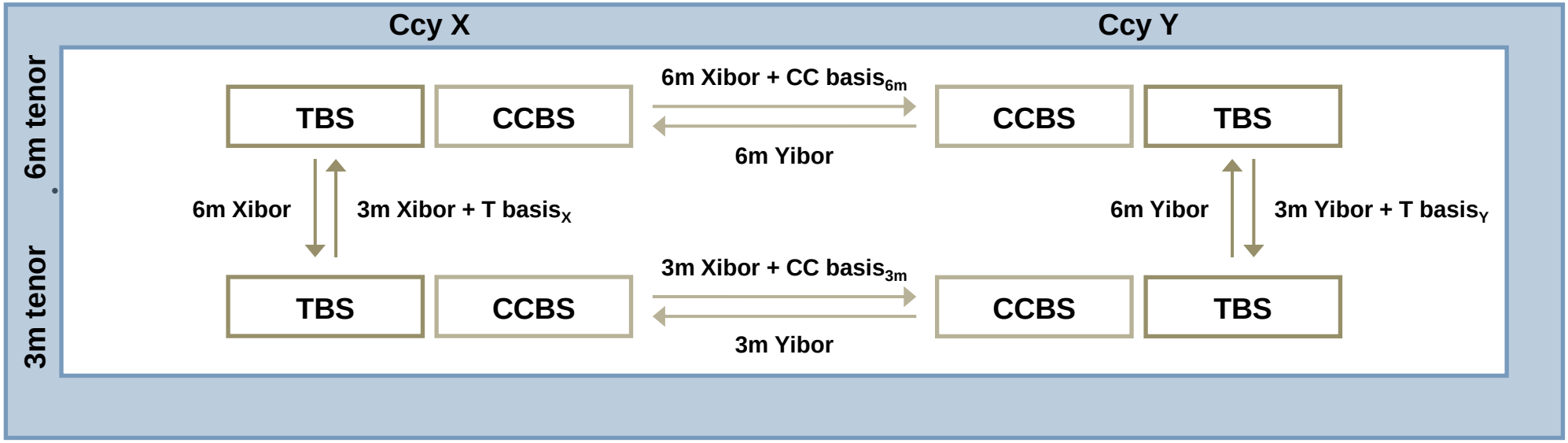
- A TBS is a combination of two fixing curves and one discount curve
- The tenor basis structure is the par rate difference of the fixing curves
- It is important to stipulate that the TBS spread is a sign of the credit premium investors demand for placements of different maturities.
- With the emergence of multiple basis curves (OIS, 1m, 3m, 6m and 12m), each reflecting the length of the Libor fixing in the swap, the spread is not given by the steepness of the money market curve.
- Terminology is:
  - Pay 1Y vs. 3s & Receive 1Y vs. 6s "=" Receiving the 1Y 3s vs. 6s TBS spread
  - Pay 1Y Eonia swap & receive 1Y vs. 3s "=" Receiving the 1Y Ois vs 3s TBS spread





Markets

Interrelation between CCBS and TBS



- This table can be extended both upwards and downwards to include 12m and OIS basis
- As a generalization to the earlier breakdown of the CCBS spread: Let F_X be the fixing reference for ccy X and F_Y the corresponding for ccy Y, where F_i belongs to the set [OIS, 1M, 3M, 6M, 12M] for i = X, Y.
- Then, the XY CCBS spread based on F_X and F_Y consists of 3 components:
  - Liquidity premium: The OIS CCBS between ccy X and ccy Y
  - Credit premium in ccy X: The OIS vs. F_X tenor basis
  - Credit premium in ccy Y: The OIS vs. F_Y tenor basis

Even for OIS rates, which usually are considered "risk free", there is a significant OIS CCBS, which indicates they cannot both be "risk free" in a multi-currency environment

Markets

CCBS implied from one OIS CCBS and two TBS'

EUR/USD basis spread implied from CCBS/TBS: EUR/USD "=" YELLOW + BLUE - GRAY

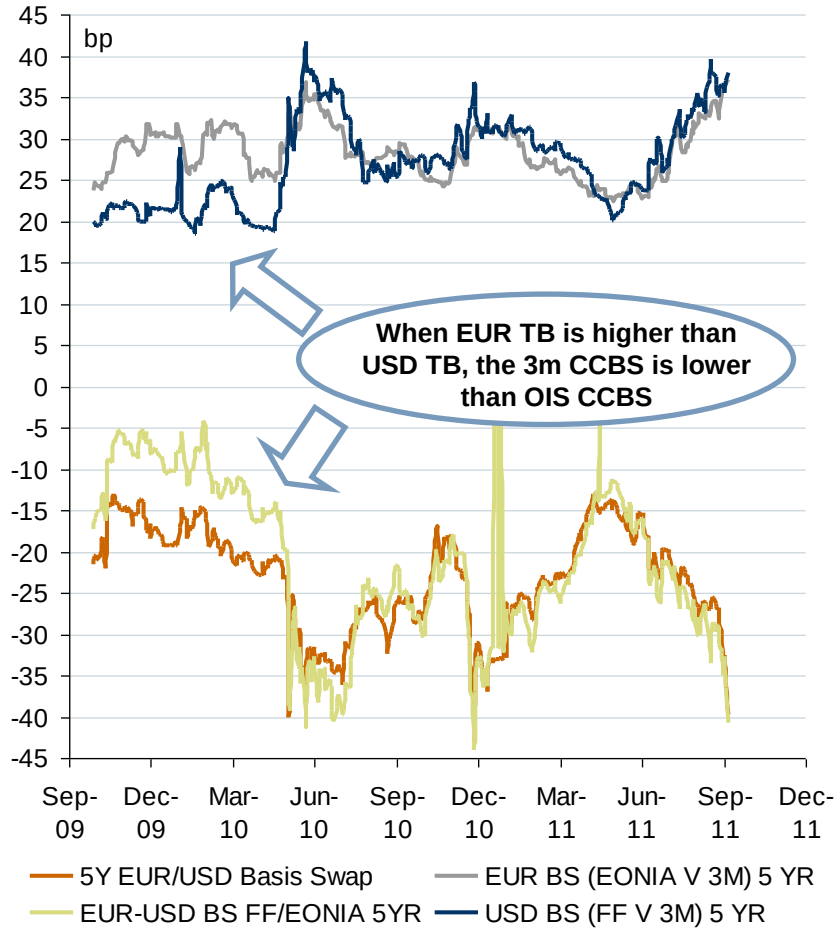
- The chart highlights
  - **Liquidity preferences:**

    EONIA vs. FF is negative showing that USD is the preferred currency.
  - **Credit – TBS'**

    CCBS = CCBS (ois) + [TBS(usd) – TBS(eur)]

    , i.e. the CCBS will be higher, the higher the TBS spread difference is.
  - **Relative importance of spread determinants**

    Simple eyeballing suggest liquidity preferences as being the most important driver.

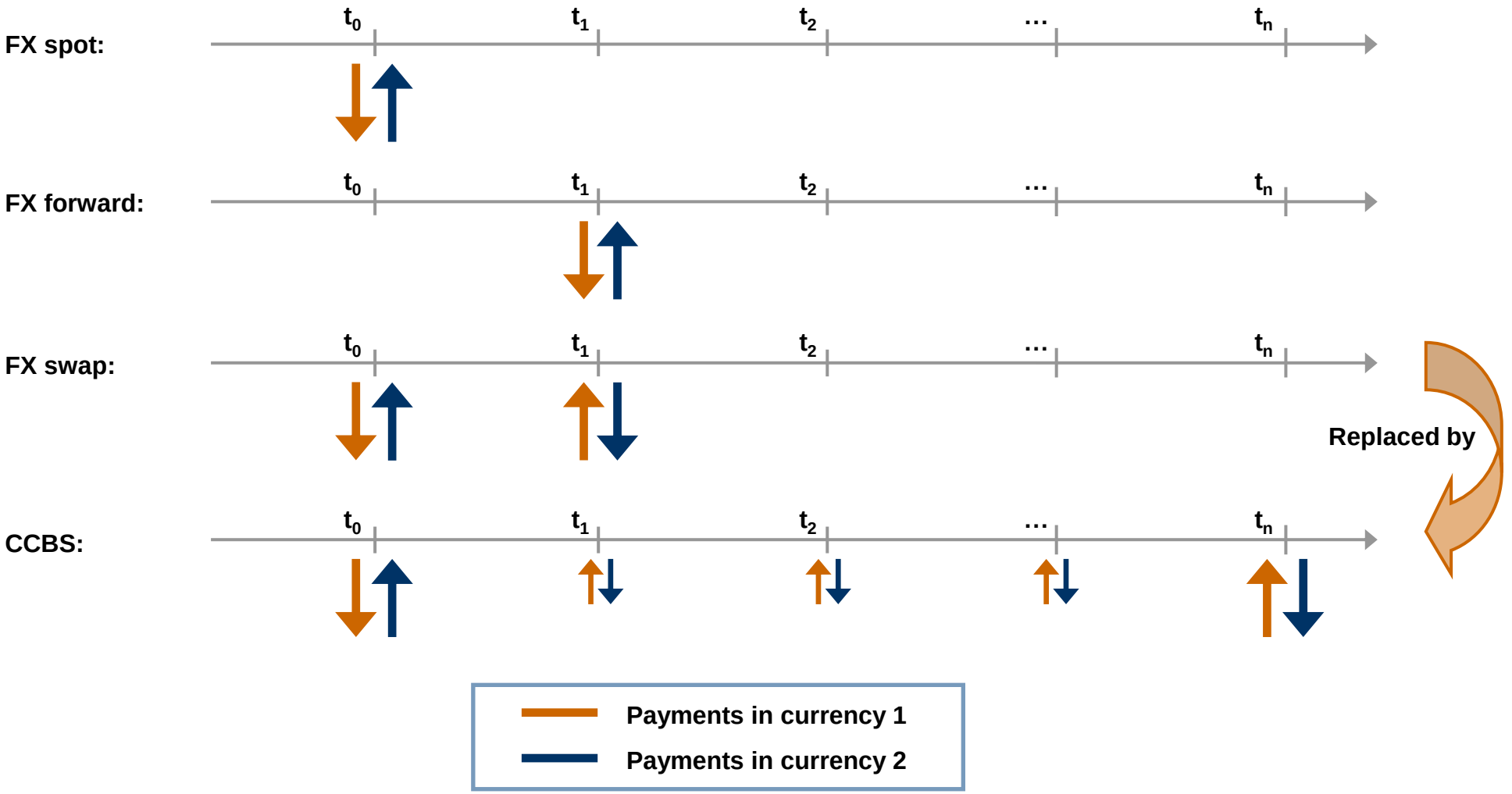


Markets

Agenda

- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

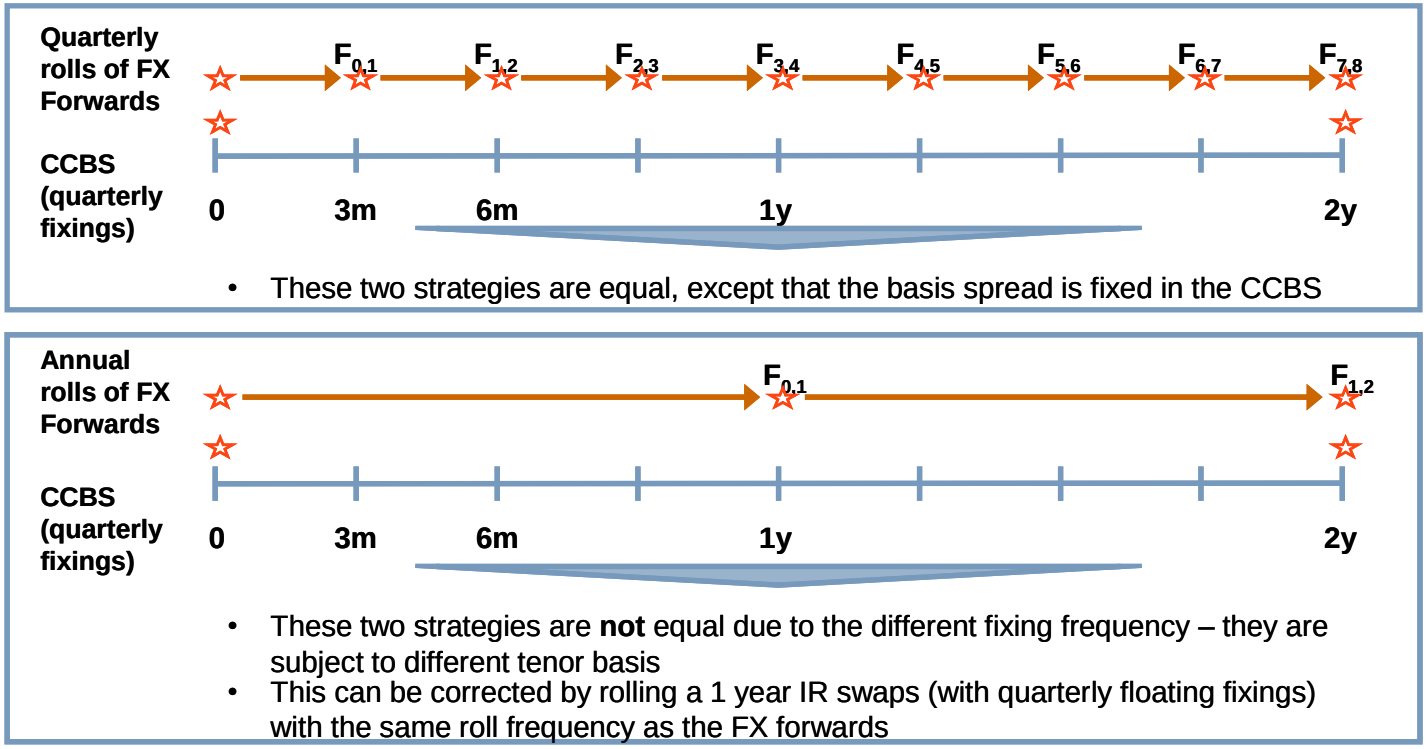
FX Forwards vs. CCBS’



Markets

CCBS and FX equivalence

- Basis swaps it a good alternative to rolling FX forward transactions for hedging FX risks
- Basis swaps are most suitable for cash flows maturing in 1Y and beyond
- Given the sharp increasing term structures (high roll), it is worthwhile to consider longer maturities, e.g. 3Y-5Y



FX fixing risk on the notional: ☆

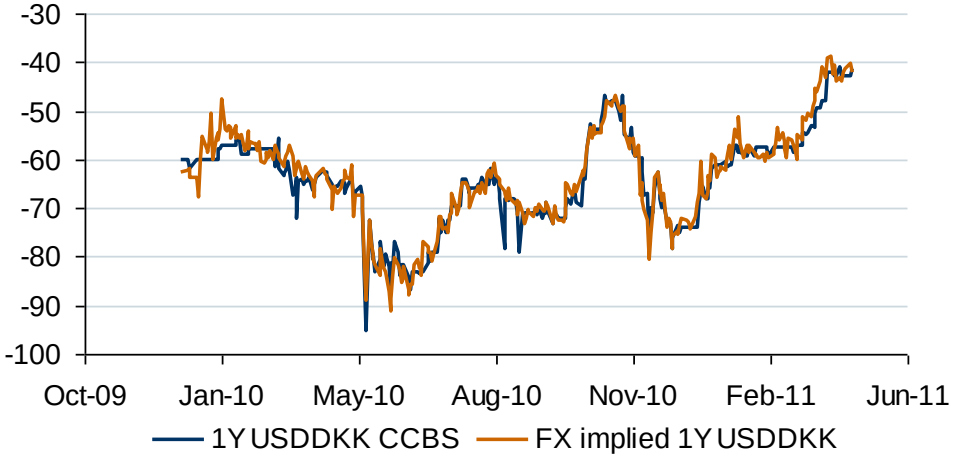
CCBS and FX equivalence

- The 1 year basis with annual payments can be found by isolating B in the following:

$$F_{EURUSD} = S_{0_{EURUSD}} \cdot \frac{(1 + Libor_{USD,1y})^T}{(1 + Euribor_{EUR,1y} + B)^T}$$

- Implied values from the FX forward market is consistent with CCBS spreads, i.e. there exist no arbitrage.
- Divergence between the two basis quotes was maximum +/- 10 bps in the period before July 2007 and after March 2009
- Differences largest when xIbors are ”most untradable”: When levels do not reflect an actual traded market due to e.g. the lack of lines and liquidity in an unsecured lending market, occurring in distressed periods

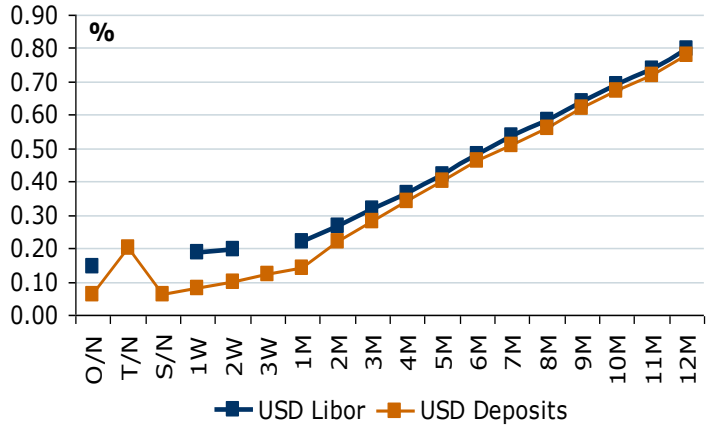
FX and basis market mutually consistent



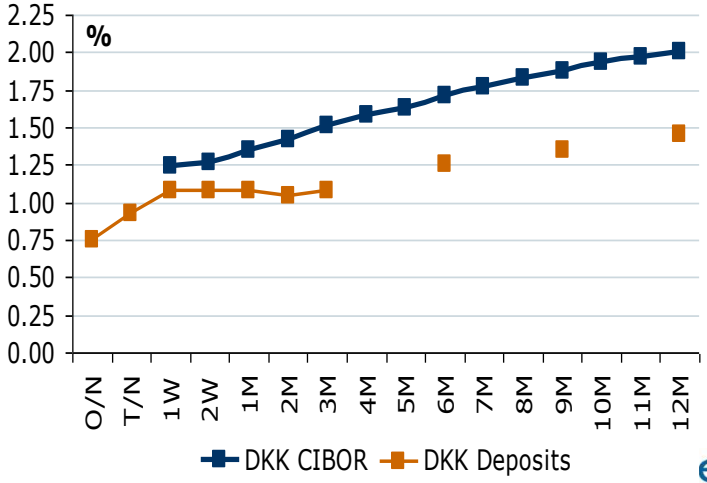
CCBS and FX equivalence

- Interest rates in basis swaps are official xIBOR fixings whereas rates in FX forwards are deposit rates.
- In a basis swap, interest payments are settled continuously and the exchange rate is constant until maturity.
- In a FX forward, the difference in interest rates is used to calculate the exchange at maturity.
- Differences between xIbor spreads and deposit spreads may cause implied basis from FX fwds to differ somewhat
- (Short term) CCBS spreads are closely related to the demand/supply for the involved currencies and hence, to some extent, have a relation to the FX spot.

USD Libor rates vs. deposit rates



Cibor rates vs. deposit rates



ets

CCBS and FX equivalence

Cross currency basis swaps (CCBS) should be an active component in the FX hedge program due to four main arguments

1. Strategic match of the maturity of the FX hedge with the underlying horizon

- Duration mismatch by rolling short FX forwards

2. Persistent steepness of CCBS curves makes CCBS' cheaper than rolling short FX forwards

- By rolling short FX forwards, one is paying the high basis spread in the short end of the curve
- Risks lies in normalisation and implied basis spreads approaching zero

3. Operational aspect

- With a CCBS - less time for monitoring, rolling and evaluating the FX hedge
- Thus, overall reduction in the administrative work

4. Indirect macro hedge

Agenda

- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

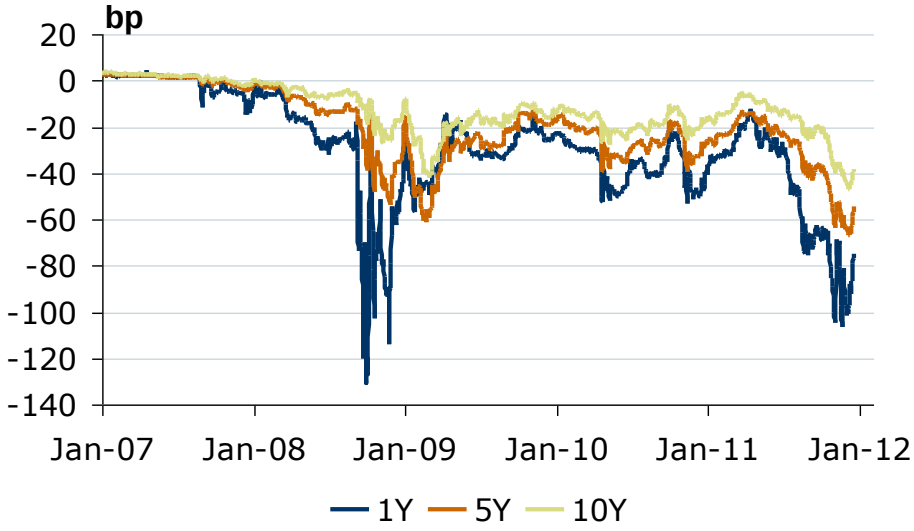
Drivers of the CCBS spread

- **Liquidity preferences** quantified by the OIS CCBS spread
- **Credit premiums** inherent in two TBS spreads
- **Bond issuances** (typically in the medium to long end of the curve)
- **Synthetic deposits**

Drivers: Pre-crisis vs. post-crisis (1)

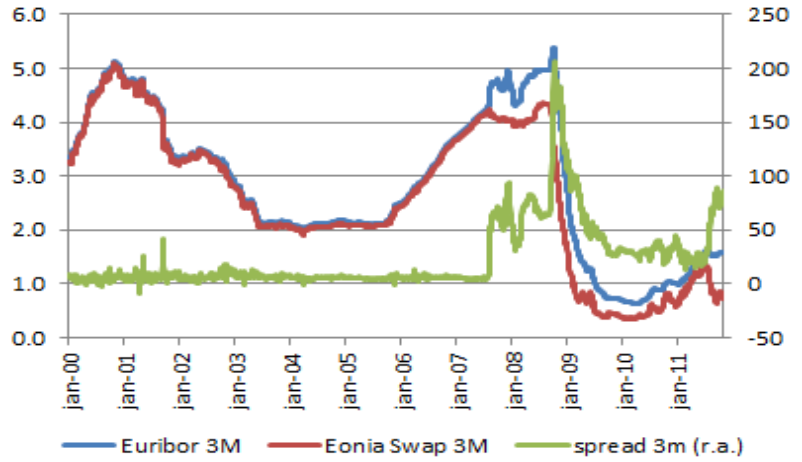
- CCBS spreads were close to zero pre-credit crisis.
- The credit crunch was a severe wake up call to that belief.
  - Libor rates are unsecured and therefore reflect credit risk on banks, **introducing the TBS spread**.
  - Demand for a specific currency may be low and the appetite for another may be high. This will in large part be driven by risk perception. This **introduces the OIS CCBS spread**.
- Determinants for the CCBS basis spread:
  - *Credit*: Higher credit risk perception on e.g. European banks drives EUR TBS spread up. As a result, the price of indirect USD funding rises, i.e. α turns more negative in the USD 3M LIBOR vs. EURIBOR 3M + α basis
  - *Liquidity & supply/demand:* USD shortage will cause OIS CCBS spreads to go more negative.
  - *Bond issuances:* Bond issuances being swapped from one currency to another currency influence the price from traditional supply/demand effects.

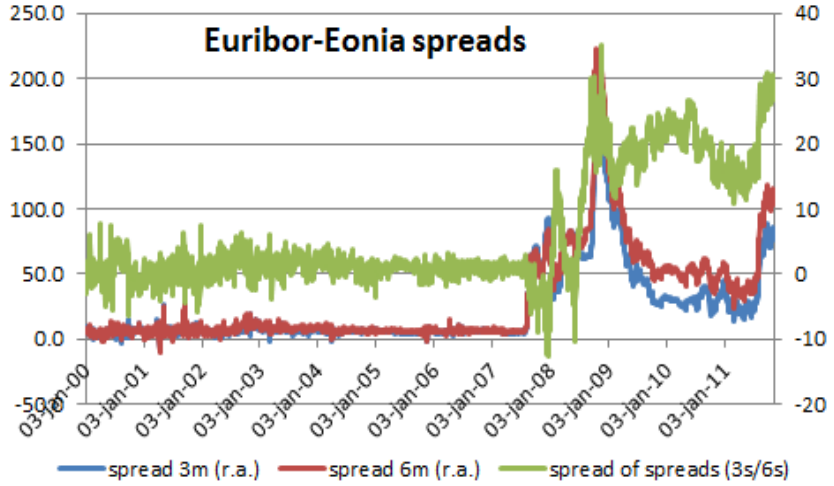
EUR/USD basis spreads no longer close to zero



Drivers: Pre-crisis vs. post-crisis (2)

- Roughly two regimes in TBS spreads
  - Before and after August 2007
- Before 2007
  - Simple spread between Euribor 3M fixing and Eonia 3M swap rate was equal to about 6 or 7bp.
  - 3m&6m interbank bid/offer was approx 1/8%. Euribor is offer and Eonia is tradable (mid). Half of 1/8% = 6.25bp
- 2007 onwards
  - Spread exploded, reaching 200bp in late 2008.
  - Similar development for (Euribor 6M- Eonia 6M)
  - Excess 6m spread over 3m spread points toward a “longer term liquidity crisis” as panel banks are offering higher spreads the longer the period.
- These patterns hold across currencies

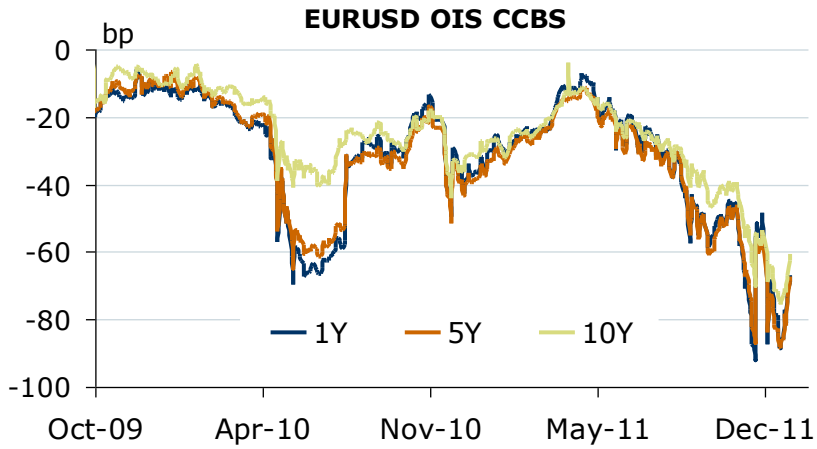




Markets

Drivers: Liquidity premiums – OIS CCBS revisited

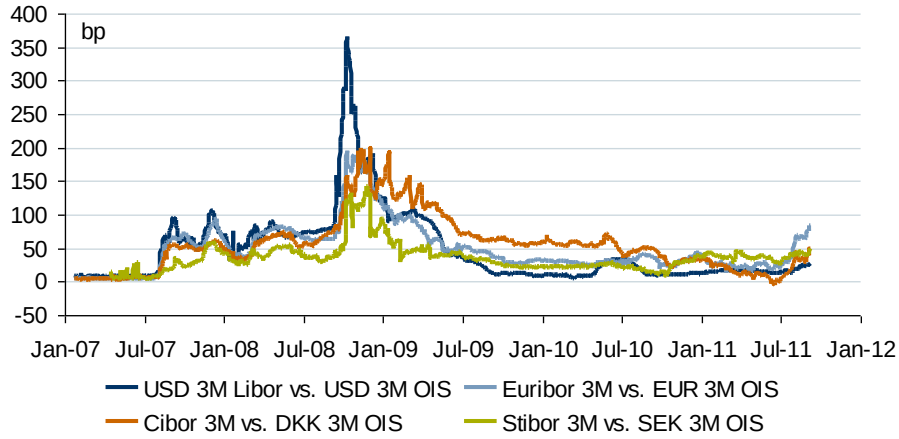
- As stated above, the cleanest indicator of preferences for liquidity in one currency relatively to another is the OIS CCBS.
- Currently, with USD funding shortages back on the agenda again, the Eonia vs. FF CCBS is on extreme lows.
- As shown above, the OIS CCBS can be viewed as one of three components of a CCBS. The OIS spread have during the latest years been the most important driver of cross currency basis spreads.
- The OIS CCBS is a clear gauge of stress in financial markets. The current market pricing is thus just another instance demonstrating the close relationship between the spreads and markets' perception of risk.
- Liquidity facilities at central banks important driver as it affects the scarcity of liquidity. This was demonstrated lately by basis spread dynamics in connection with ECB's 3Y LTRO and 3M USD allotments.
- These operations have been introduced in order to counteract a full-blown funding collapse as seen during the credit crisis.



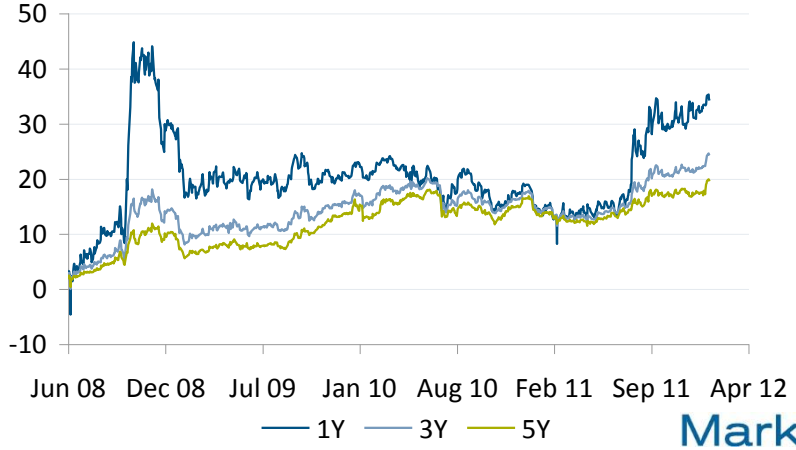
Drivers: Credit premiums – TBS revisited

- TBS spreads and Libor/OIS or FRA/OIS are closely connected.
- TBS spreads are clear gauges of stress in financial markets.
- TBS spreads and Libor/OIS spreads widens as credit risk soars and banks keep liquidity close (as in 2008)
- Note that the credit premium inherent in the TBS spread is on the panel set of banks who quotes the Xibor.
- Besides a credit premium, the TBS spread is judged to reflect a liquidity premium as well:
  - As stress grows, default probabilities increase, but funding/liquidity worries will most likely grow as well as banks want to ensure their own funding. Thus, they will keep liquidity close.
  - These will almost surely correlate positively, and thus point in the same direction though.
- Concerning credit premiums and CCBS spreads, note that it is a relative game between two domestic tenor basis spreads.
  - For a constant OIS CCBS, the difference between the two TBS spreads has to change in order for the standard CCBS spread to move.
  - Thus, spiking credit premiums does not necessarily lead to changes CCBS spreads.

3M Libor/OIS spreads in USD, EUR, SEK and DKK



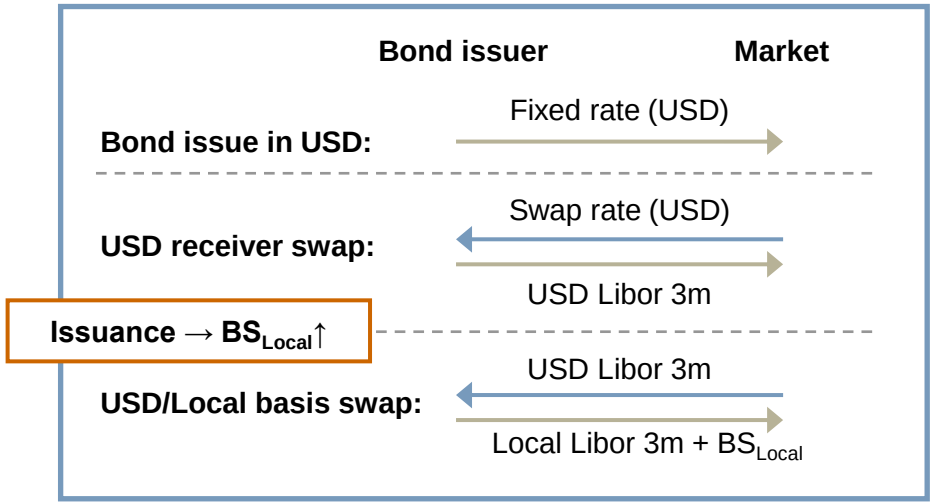
EUR 3s vs. 6s TBS spread



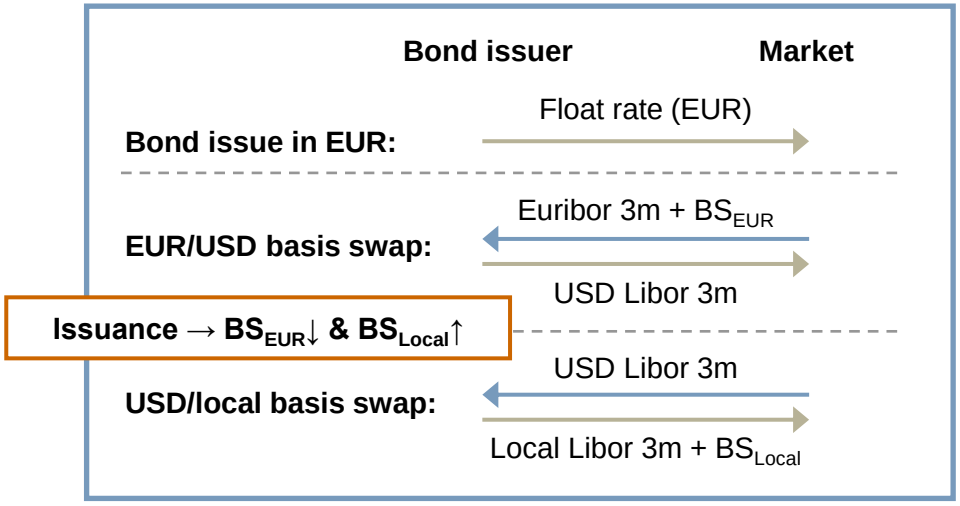
Drivers: Bond issuances (1)

- Bond issuances by corporates, banks, sovereigns and supranationals being swapped into another currency via basis swaps all influence the cross currency basis swap spread.
  - Low liquidity and investor interests may motivate issuances in EUR or USD.
  - To swap the cash flows back to the local currency a CCBS is entered.
  - These flows will support the CCBS spreads against USD (going less negative / more positive).
- Bond issuances affecting the CCBS have “always” been present (e.g. positive USDCAD CCBS spreads throughout the 1990’s) but has become more prominent post-crisis.
  - As credit standards have been tightened, many European bank loans have been substituted by bond issues, which increased significantly in 2009 and 2010 compared to 2006-2008.
- When USD bond issues are being swapped into EUR, the higher the price of EUR liquidity. That will push the EUR/USD basis spread higher (less negative). These arguments goes as well for bond issuances in USD swapped into NOK, SEK, or DKK, i.e. the basis spread will tend to be strengthened in the local currency.
  - EUR issues will often go through USD. Therefore a EUR issuance by a Swedish issuer will affect both the EURUSD (downwards) and the USDSEK CCBS spread (upwards).

Swapping payments of a (fixed) USD bond issue



Swapping payments of a (float) EUR bond issue



Markets

Drivers: Bond issuances (2)

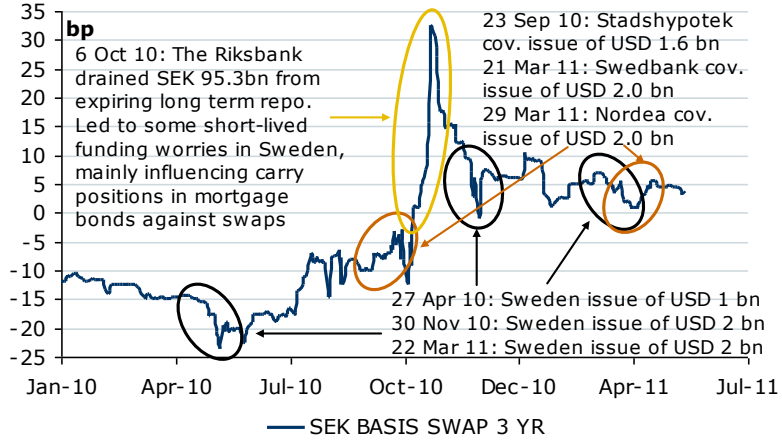
- Covered issues are restricted to be basis swapped back into local currency
- Issuances' impact on CCBS depends on:
  - Currency (best liquidity in EUR, USD and GBP)
  - Bond size and maturity
  - Investor interest (better depth among investors in EUR and USD)
  - Market direction (going with the market could be dearer)
- Note: In 2011, SEK issuances was substantial (as in 2010). As EURSEK CCBS turns higher, **issuances in the opposite direction have begun to occur more frequently as issuers "have the basis with them".**

Example: Nordea EUR issuance in November 2010

- By issuing in EUR Nordea attracts EUR investors instead of issuing in SEK, where liquidity and the investor base is more limited
- EUR yield: Swap + 28bp
- SEK yield: Swap + 86bp (inferred from comparable bond)
- The EUR issuance is basis swapped back to SEK, costing the EURSEK CCBS (42bp for 5Y) and the 3M6M EUR tenor basis (13bp): 28bp+42bp+13bp = 83bp (~86bp)

USDNOK CCBS higher on covered issues

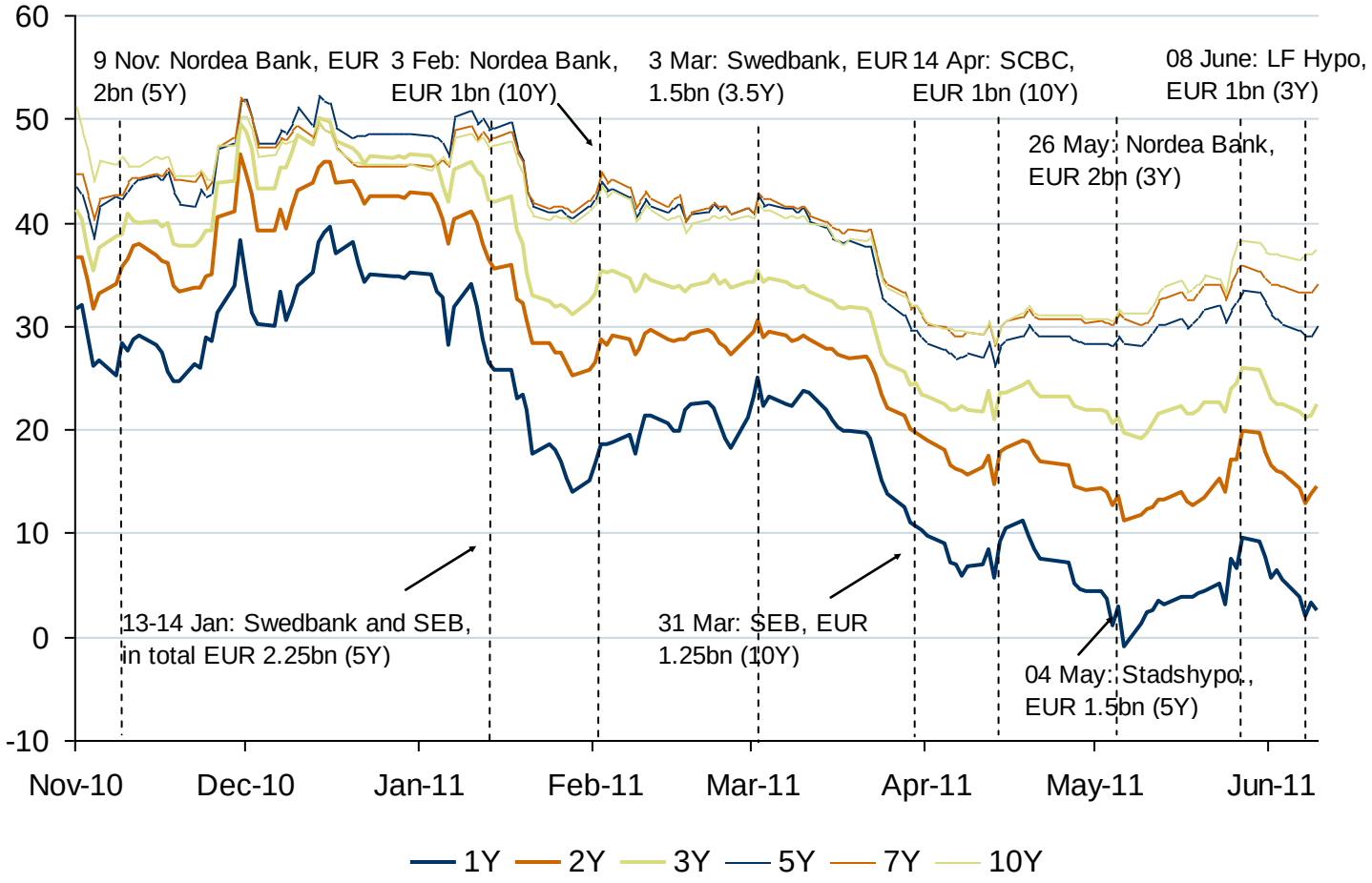
USDSEK CCBS higher on covered issues, lower on SNDO issuances



Markets

Drivers: Bond issuances (3)

EURSEK CCBS and covered issues before summer-2011 turmoil

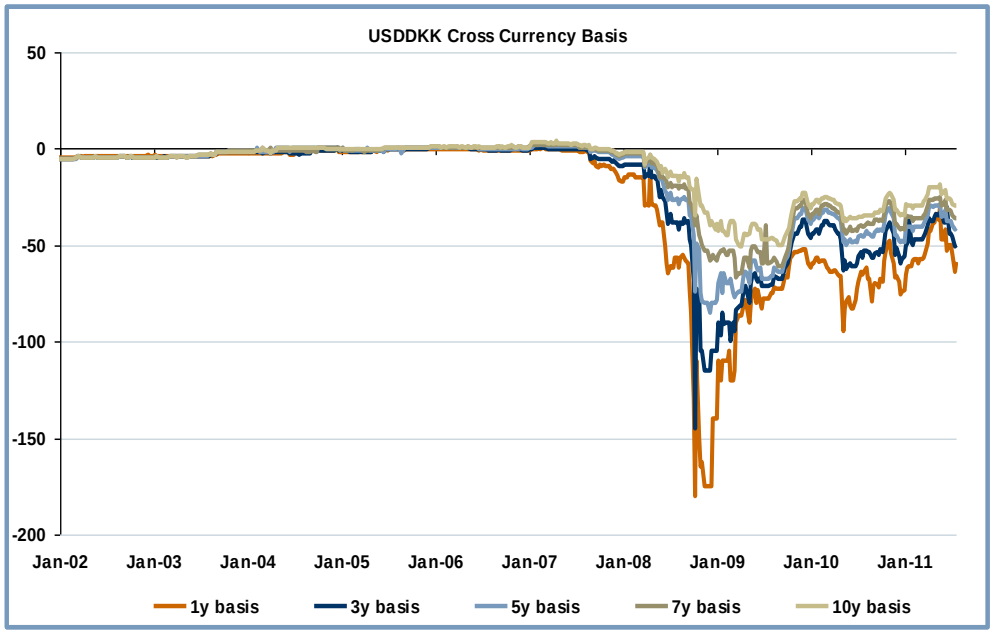


Agenda

- Fundamentals of cross currency basis swaps (CCBS)
- Understanding the CCBS spread
- CCBS and FX equivalence
- Drivers of the CCBS spread
- Additional observations

Additional observations: Curve dynamics (1)

- The slope of the cross currency basis swap curve is consistently positive for long periods
  - Ex ante CCBS's thus have positive roll
- Front end much more volatile
  - Hence, shorter CCBS's (and FX forwards and TBS') are more exposed to crisis conditions
- Strong correlation across the curve
  - This reflects how the macro economic climate affects the entire curve – but strongest in the short end
  - However issuance activity reduces this effect as it more isolated affects the point being issued in



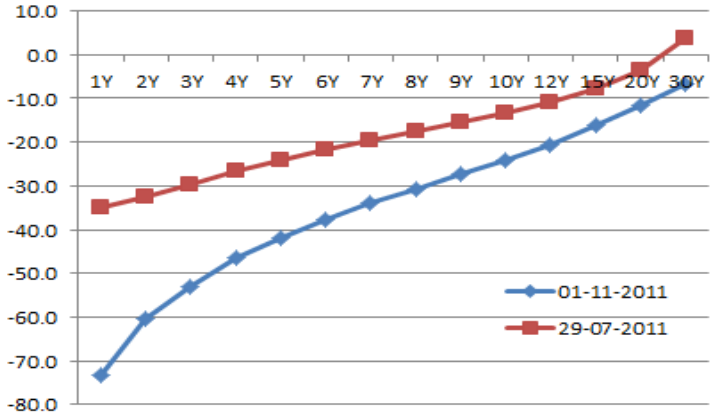
Correlations (2008-11)

	1y	3y	5y	7y	10y
1y	100%	77%	70%	43%	58%
3y	77%	100%	78%	35%	64%
5y	70%	78%	100%	56%	78%
7y	43%	35%	56%	100%	65%
10y	58%	64%	78%	65%	100%

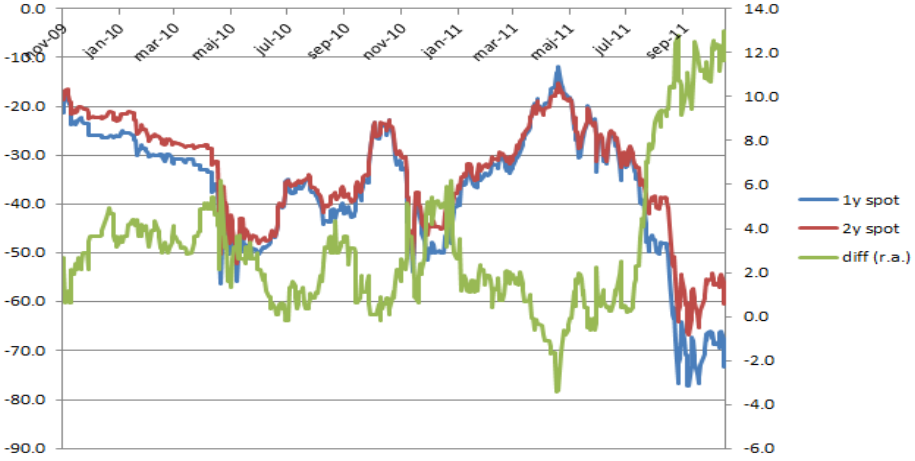
Additional observations: Curve dynamics (2)

- 2 factors seem to capture the term structure
- When risk aversion transpires
  - Levels widen
  - Term structures steepen
- Both effects are (in general) higher the shorter the tenors involved
- For most ccy's, the steepness increase the most in 1y-3y as risk aversion spikes
  - Short forward starting contracts often attractive as alternatives to spot contracts
- 5y+ contracts are much more stable
- A flat term structure, fast converging towards zero will be a big sign of normalisation
- Ois-based CCBS spread term structures display the same properties

EURUSD CCBS structure (july & nov 2011)



Steepness and level highly correlated



Markets

Additional observations: Level comparison

- One often sees the extremes from 2008-09 as a reference for where spreads can go. However, this is to be done with caution:
- 1. Rates levels. It has some influence. Say the Euribor + CCBS spread < 0: Then someone has to pay on both legs.
  - Some precedence though – e.g. pay Swiss swaps in August 2011 (actual receive on both legs)
  - Thus, the -133bp (for 1Y EURUSD CCBS) reached in 2008 should be unattainable at current rate levels (-86bp now)
- 2. Central bank liquidity operations. This (softly) caps/floors spreads
  - Tenor basis should not go much wider than the ECB corridor
  - CCBS spreads should be floored by USD liquidity provisions by central bank coalition (price = USD OIS+50bp as of Jan-12)
  - However, all participants in the basis market cannot tap these facilities.

Thank you!

Lars Peter Lilleøre, Chief Analyst

Head of Rates and Volatility Strategy

lars.peter.lilleore@nordea.com

+45 3333 1470