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US Interest Rate Strategy Focus

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Funding Rates and Swap Spreads – Drivers, frictions, and potential lower bounds

Dealer balance sheet is an increasingly scarce resource that nonetheless remains integral to the functioning of many areas of the fixed income market. The diminished balance sheet capacity has, in turn, had knock-on implications, most clearly visible in cash/derivative rate spreads, as well as spreads associated with some uncleared derivatives.

We believe recent swap spread behavior—the relentless tightening seen over the past few months—is a consequence of flow imbalances in the face of this balance sheet scarcity. We delve into these flows, as well as balance sheet issues and its impact on various funding spreads in greater detail in this article. We also arrive at potential lower bounds for swap spreads by reviewing the economics of holding spread wideners as standalone trades for various market participants. Our conclusions are summarized below:

- We find that the reliance of GC and bilateral repo on dealer balance sheet (i.e., where the intermediary is the lender) should mean that these rates trend higher relative to other borrowing rates. This has important implications for how assets that require financing price relative to similar assets that do not.
- In considering the interaction of various flows that influence swap spreads with dealer balance sheet scarcity, we conclude that the bulk of such flows bias spreads tighter over the near term, causing spreads to appear persistently tight to historical fair value models.
- We examine the economic incentives of various potential "buyers" of spread widening exposure, and calculate breakeven spread levels at which these players are incentivized to add such exposure. We find that while we are about 15-20bp away from such levels for front and intermediate spreads, long-end spreads are already at levels that may be attractive to some investors.

What's the matter with swap spreads?

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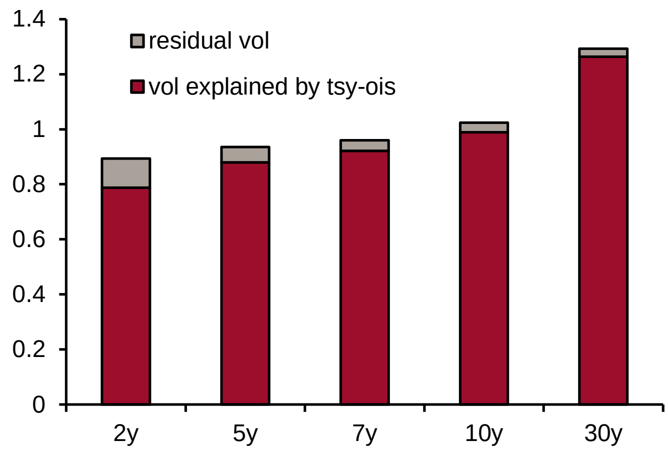
Over the past year, swap spreads across the curve have narrowed significantly. What's driving this relentless tightening? At various points in time, we've seen specific drivers—for instance, in late summer, front and belly spreads were significantly impacted by EM reserve liquidations (discussed here and here). However, a common factor over the past year has been the inability of dealers to buffer one-sided flows, largely the result of balance sheets becoming increasingly expensive, particularly for the cash leg—virtually all tightening in spreads is the result of Treasuries cheapening, not only versus Libor swaps, but also OIS swaps. Indeed, as can be seen in Exhibit 1, the majority of the variation in swap spreads can be explained by the variation in Treasury-OIS spreads. This trend of cash cheapening versus derivatives is apparent across other assets—cash/CDX, for example, or in capital-intensive uncleared derivatives like cross-currency swaps (Exhibit 2).

Exhibit 1: Virtually all of the variation in swap spreads over the past year has been explained by Treasury-OIS spreads

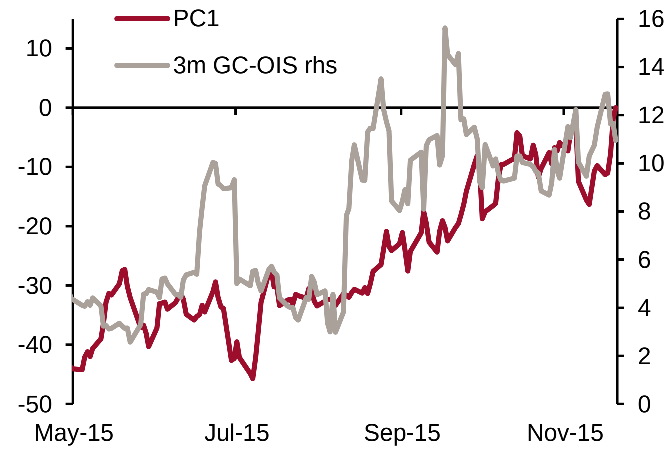
Standard deviation of swap spreads, and fraction explained* by changes in Treasury-OIS spreads; bp/day



Source: Credit Suisse
*From R^2 of regression of daily changes of swap spreads on daily changes of Treasury-OIS spreads

Exhibit 2: The cheapening of cash versus derivatives is apparent across asset classes, and appears to be related to balance sheet pressures

First principal component of cash/derivatives spreads* and 3m GC-OIS spread; bp



Source: Credit Suisse
*First principal component of Treasury asset swap curve, Cash/CDX basis, EUR/USD cross-currency basis

At the same time that balance sheet costs have risen (we discuss this in greater detail in the next section), regulation has made systemic risks more remote, leading unsecured borrowing rates of highly regulated banks to price at a relatively stable spread to O/N funding. Clearing has alleviated counterparty risk—this means additional spread no longer needs to be priced into derivative contracts.

The cumulative result of regulation has been the absence of dealers warehousing sizable risk and/or arbitrageurs readily taking offsetting positions—leading imbalanced flows to move spreads sharply away from model-based measures of fair value, as they've done recently. Understanding these flows then is critically important—**in the rest of this article, we focus on interaction of various flows that influence swap spreads and scarce dealer balance sheets. Our conclusion is the bulk of such flows bias spreads tighter over the near term. We also examine the economic incentives of various potential "buyers" of spread-widening exposure, and calculate breakeven spread levels at which these players are incentivized to add such exposure. We find that while we are about 15bp-20bp away from such levels for front and intermediate spreads, long-end spreads are already at levels that may be attractive to some investors.** We note that this exercise is not an attempt at finding fair value; rather, it is an effort to put a lower bound on how cheap Treasuries at various maturities can get relative to swap rates.

Scarce balance sheet means higher funding costs

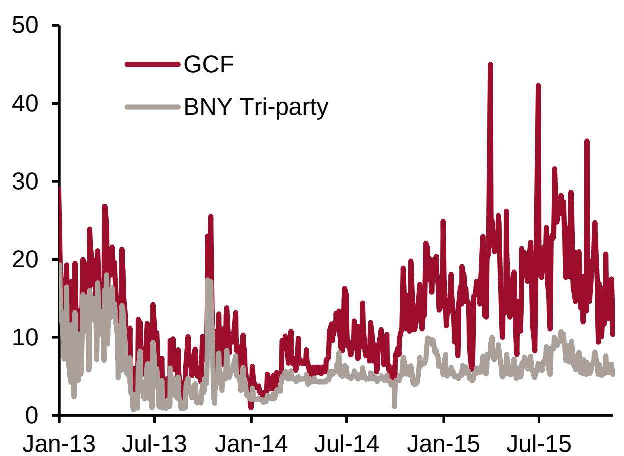
To understand recent swap spread behavior, it is critically important to understand intermediary dealer balance sheets, and associated costs. As we've noted on past occasions (see here and here), balance sheet pressures have manifested as a differentiation in funding rates and availability of funding for various market participants. This differentiation has affected a variety of spreads between various rates. For instance, narrower swap spreads are at least partly attributable to the fact that term GC rates have begun to drift above Libor rates. While it may appear puzzling that the three-month GC repo rate (a secured lending rate) is trading above Libor (an uncollateralized rate), it is important to note that they reflect rates applicable to two different sets of borrowers. Libor panel banks, for instance, have secured borrowing rates that are close to or below the Fed funds rate, also an unsecured rate.

It's easy to get lost in the many different types of financing rates, so it's useful to review some of them here. In particular, we'll look at O/N and term versions of the triparty repo (primarily borrowing from money funds), GCF repo, fed funds, Libor, bilateral repo (multi-layer, counterparty dependent). **We find that GC and bilateral repo that "use" an increasingly scarce resource such as dealer balance sheet (i.e., where the intermediary is the lender) will trend higher relative to other borrowing rates. This has important implications for how assets that require financing price relative to other similar assets that do not.**

We start with the GC–fed funds spread. Over the course of this year, the spread between GC and the money market fund (MMF) triparty rate has been widening (Exhibit 3). This MMF rate is the rate at which banks/dealers access wholesale funding from money markets, and while we don't really have good historical term data at high frequencies, periodic observations of the MMF triparty repo rate suggest that it trades at a relatively stable spread below fed funds. Therefore, using term GC-OIS spreads, in our view, offer a good sense of costs of dealer intermediation at different terms. Put differently, it reflects the cost of renting dealer balance sheet, which as we've argued has been going up as new rules, like the leverage ratio, are phased in (Exhibit 4, see here for our fair value model).

Exhibit 3: As regulations have kicked in, the spread between GC and triparty repo rates has increased

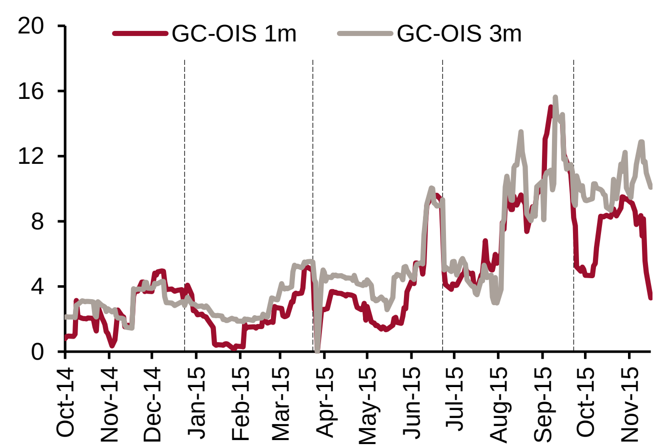
Overnight GCF and BNY tri-party repo rates; bp



Source: the BLOOMBERG PROFESSIONAL™ service, BNY Mellon

Exhibit 4: GC-OIS, a good proxy for term spreads between GC/triparty rates, has behaved similarly

GC-OIS spreads; bp



Source: Credit Suisse Locus

While the GC-OIS spread has been rising, we believe repo businesses aren't yet pricing it at a cost that reflects a healthy Return on Equity (RoE)—at current levels of GC-OIS, with leverage ratio as the binding constraint, the RoE for a bank on a repo transaction is between 3% and 5%, depending on the particular version of the leverage ratio rule that is applicable. In theory, for repo books to break even on cost of capital (we assume 10% WACC), GC-OIS would have to be 30bp to 50bp (depending on whether one assumes a 3% or 5% leverage ratio). This underpricing of repo costs is partly because dealers likely view the repo business as part of a full suite of services offered to customers.

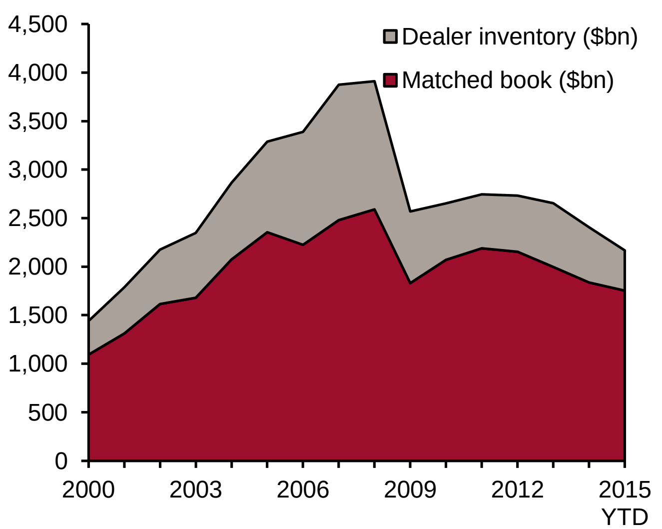
Not only have intermediating dealers not yet fully priced in balance sheet costs, but we also expect that they won't do so in the near future as well. Instead, to avoid having a large drag on returns of the business as a whole, we expect they will use some combination of wider GC–OIS spreads and rationing of balance sheet. As Exhibit 5 shows, dealers have been shrinking their repo books and inventories (though inventory decline may be for other reasons, such as the Volcker rule). Further, certain counterparties are likely to lose access to funding, or be able to obtain balance sheet only at a higher spread to GC (such as bilateral repos with hedge funds).

Where does Libor sit? Libor is the cost of unsecured funding for the intermediary bank, it does not reflect the costs associated with "renting out" balance sheet. Looking ahead, credit risk in Libor panel banks is minimal (especially so post-2008 reforms), as is the risk of a disconnect between the market for Eurodollar deposits and fed funds. This means the Libor-OIS spread, which is a pure term spread in the absence of the aforementioned risks, is likely to remain relatively stable through the hiking cycle.

By contrast, increases in term GC–OIS spread, which are reflective of the increased cost of renting balance sheet, are likely to continue. Therefore, while it's true that GC is a secured funding rate, there is no reason it can't trade over Libor on a persistent basis—it is simply reflective of the relative scarcity of resources.

Exhibit 5: Dealer balance sheet available for repo transactions has been shrinking

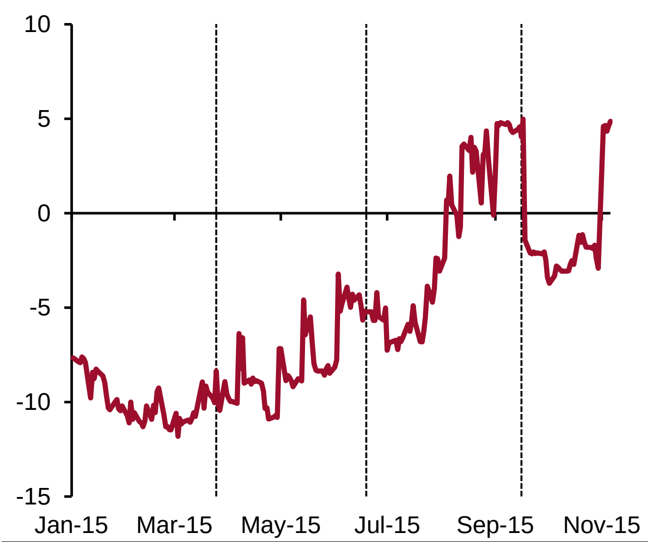
Aggregate matched book and dealer inventory* sizes; $bn



Source: Credit Suisse, SIFMA, FRBNY
*Dealer inventory financed via repo transactions.

Exhibit 6: The widening in GC-Libor spreads is likely to continue, with spikes around quarter-ends

3m GC-Libor spread; bp



Source: Credit Suisse Locus
Dotted lines denote quarter ends.

How do we see GC-Libor evolving? Near term, we think the spread will continue to widen going into year-end and normalize to its more gradual widening trend seen since early this year (Exhibit 6). **Over time, though, flows out of institutional prime funds into government-only funds as a result of money market reform are likely to pause or partially reverse this widening**. At present, institutional prime funds have about $950bn AUM, of which roughly 13% is invested in financial company CP and 30% in CDs. Assuming about $300bn of the total AUM moves to government-only funds, and prime funds maintain a similar asset distribution, financials will need to replace about $130bn in funding they current get from prime funds. At the same time, the AUM of institutional government-only funds, currently around $400bn, will likely increase substantially both as a result of money fund reform and the movement of deposits from banks following liftoff. These funds are mandated to invest in short-term Treasury and GSE debt and repos collateralized with Treasury or GSE debt, which on the margin, richen GC relative Libor.

Flows affecting swap spreads

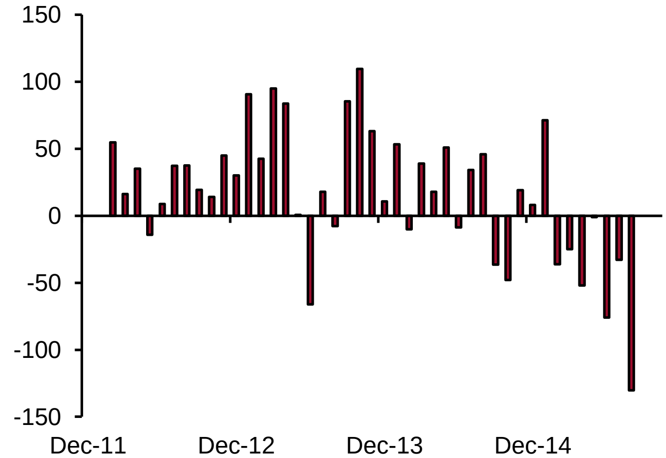
With that aside on funding costs, we now delve into flows affecting swap spreads, and find that flow imbalances in the near term bias these spreads tighter. Historically, net Treasury supply is usually a big factor in driving swap spreads, especially when there are concentrated changes. The last time spreads hit all-time tights prior to the current period was in early 2010 following a significant increase in net supply. Viewing Fed/foreign official sector purchases as “price insensitive” demand, net supply (ex-official sector) also rose this summer as EM reserve managers tried to stem the currency impact of capital outflows. Exhibit 7 shows the change in EM reserves, adjusted for currency changes—as can be seen, these reserves have been dropping since late last year. We expect reserves will continue to drop in the coming year, particularly in the case of China and OPEC (and other oil producers). This means that net supply (ex-official sector) is likely to be a drag on spread wideners.

Another factor that has pushed spread tighter this year has been issuance-related swapping. Corporate issuance has been trending higher, partly driven by M&A activity this year; we expect this will continue in 2016 (Exhibit 8). While the tightness of spreads may make swapping seem unattractive as it means locking a higher cost of funds (on a spread to Libor basis), we note that corporates hedge their issuance for a variety of other reasons beyond minimizing funding costs—for instance, to match funding to floating rate assets, reducing income statement volatility in the process. Looking ahead, many of these reasons aren’t likely to change even post liftoff, and while we expect there will be reduced swapping by some issuers, we could see the opposite in others (for instance, from high yield issuers who typically have loans with 1% Libor floors). Therefore, issuance-related swapping is likely to be a source of continued tightening pressure on spreads.

One issue with trying to fade the tightening in swap spreads is that the positioning in markets is unclear. While it is very likely that fast money accounts have been stopped out of spread wideners, large players with implicit spread-widening exposure have not. For instance, many mortgage investors, such as GSEs, REITs, asset managers, banks, etc., hedge a portion of their MBS holdings using swaps and are effectively exposed to a cash/swaps basis (this is true to a smaller extent for credit investors). Using very approximate assumptions about the fraction of MBS hedged, we believe there to be about $500bn 10s in swap pay fixed positions in such accounts. Given that spread tightening translates to underperformance of hedges for such accounts, a switch of even a fraction of these swap-based hedges to cash or futures could result in further tightening pressure on spreads.

Exhibit 7: EM reserves have been dropping for much of this year, and we expect this pattern to continue in 2016

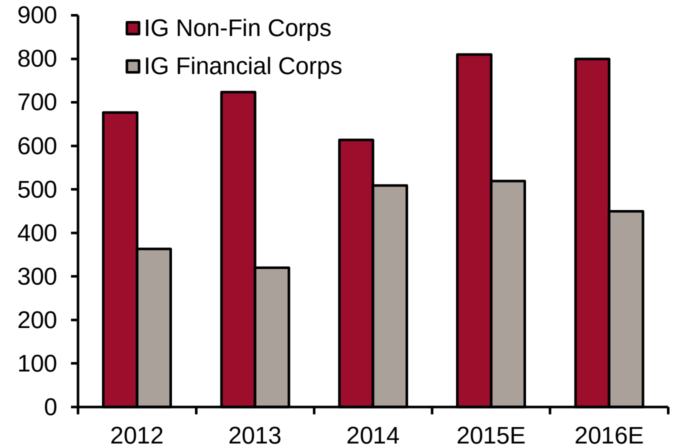
Monthly change in EM reserves since 2012; adjusted for currency changes, $bn



Source: Credit Suisse

Exhibit 8: Corporate issuance, while seeing a modest dip in 2016 from the elevated levels this year, is still likely to be high

Issuance; $bil



Source: Credit Suisse

Given the array of flows that seem to be aligned towards tighter spreads, what participants might take the opposite side? One source could be banks, which for regulatory reasons, may purchase Treasuries such as HQLA, particularly if they lose a lot of non-financial deposits post-liftoff. Others, such as insurance companies, may be forced to change their asset mix to include more Treasuries for collateral purposes (though this is likely to be further down the line). Finally, any investor could buy spreads if it made sense from a return-to-risk perspective—these are economic buyers and are likely to be the only ones who could put a floor on spreads near term. At what level of spreads will this look attractive to these accounts? Since spread trades are “high return” only if they are financed, our analysis of the relationship between GC, Fed funds and Libor in the previous section will prove useful.

The economics of spread wideners and “lower bounds”

In this section, we arrive at “lower bounds” on swap spreads by trying to answer the following question: at what level of spreads does holding a spread widener become attractive for a bank/dealer, for a life insurance company, or for a fixed income asset manager?

Exhibit 9 shows our estimate for breakeven swap spreads across the curve for banks/dealers. This is the spread at which a swap spread widener earns a 15% RoE even if spreads remain at the very negative break-even levels. In arriving at this estimate, we relied on several assumptions. First, with leverage ratio being the binding constraint for banks, this assumption is critical—we assume an average of 3% applicable to several European banks and 5% applicable to US and Swiss banks. Other assumptions are shown in Exhibit 9. It is clear that except for 30y spreads, none of the other spreads are close to bounds computed using this framework. Including rolldown on the asset swap curve (which is very steep) makes these bounds less negative particularly at intermediate and longer maturities. For instance, **5y and 10y spreads appear to be about 15bp-20bp away from their lower bounds, while 30y spreads appear to be through such a bound. That is, at current levels, it already makes economic sense for banks/dealers to consider long-end spread wideners (of course, this depends on the roll being realized)**.

Another way to look at how much spread widening ought to occur is to calculate how much tightening of swap spreads an investor would require to match the risk-adjusted return of spread wideners before spreads started to get very volatile late this summer. Exhibit 10 shows our estimates for these spread changes—as can be seen, an asset manager holding spread wideners at the long end would now require significantly far more negative spreads given the increased volatility. This approach suggests an opposite view to that in the last paragraph—asset managers comfortable with risk-adjusted returns on spread wideners prior to this August should find front and belly spreads, which have narrowed far greater than the increased vol would warrant, attractive (also Exhibit 10). That said, they would only be attractive if volatility in spreads does not rise further—put differently, if spreads stabilize, we would expect the support to show up first in the front end and belly from these types of investors.

Exhibit 9: From a bank/dealer perspective, spreads would have to be substantially negative for a widening exposure to make economic sense on a standalone basis

Breakeven swap spread levels for various maturities*

	2y	5y	10y	30y
Initial Margin (for $10mm)	66,080	197,679	439,281	1,143,941
Leverage add-on; %	0.50%	0.50%	1.50%	1.50%
Repo Haircut; %	0.02%	1.30%	2.80%	5.80%
Equity; $	403,523	413,907	431,171	471,358
Net Carry (ex-Spread); $	19,657	18,347	16,371	11,303
Asset swap spread; bp	(6.1)	6.6	13.1	44.3
Return From Spread; $	(6,099)	6,551	13,073	44,324
All-in Return; $	13,558	24,897	29,444	55,627
RoE; %	3.36%	6.02%	6.83%	11.80%
RoE Gap; $	46,971	37,189	35,232	15,077
Breakeven Spread; bp	**(41)**	**(44)**	**(48)**	**(59)**
Breakeven Spd (w/ roll); bp	**(38)**	**(22)**	**(30)**	**(34)**

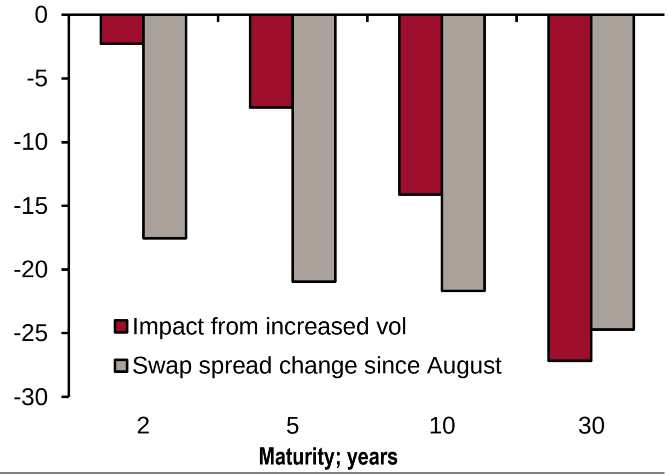
Source: Credit Suisse
*We use double olds for calculations, to avoid specialness and liquidity premia baked into current on-the-runs.

Finally, we look at the long end from the perspective of LDI accounts. Here, the choice of which instrument to use to add long duration affects spreads. We perform a return analysis between a long WN futures position, a receive fixed position in 30y swaps, and a financed 30y Treasury position (which would have similar economics to a TRS position), controlling for duration differences. At current spread levels, we note that returns on swaps underperform that on futures or the Treasury longs significantly. At what level of 30y spreads does receiving fixed in swaps become attractive relative to the other options? Assuming term GC trades at a zero spread to Libor, and accounting for various costs, our simple analysis suggests this “indifference” level is -35bp, similar to our computation for dealers’ breakeven levels when including rolldown. That is, **at current levels, it makes sense for LDI managers to switch their duration longs from swaps to futures or Treasury TRS**.

Note that the above analysis depends on our assumption of the average Libor/GC spread over the period these positions are compared—clearly, as discussed in the previous section, where this spread ends up is an open question (we think it’s not unreasonable for term GC to trade above Libor). Exhibit 11 shows various 30y spread levels at which an LDI investor would be indifferent between receiving fixed and being long futures for different assumptions of the Libor/GC spread. As can be seen, **in a world with less balance sheet scarcity, and therefore wider Libor/GC spreads, LDI investors should find receiving fixed in swaps attractive at wider swap spread levels**.

Exhibit 10: Increased volatility requires negative spreads to make risk-adjusted returns on spread wideners, particularly at the long end

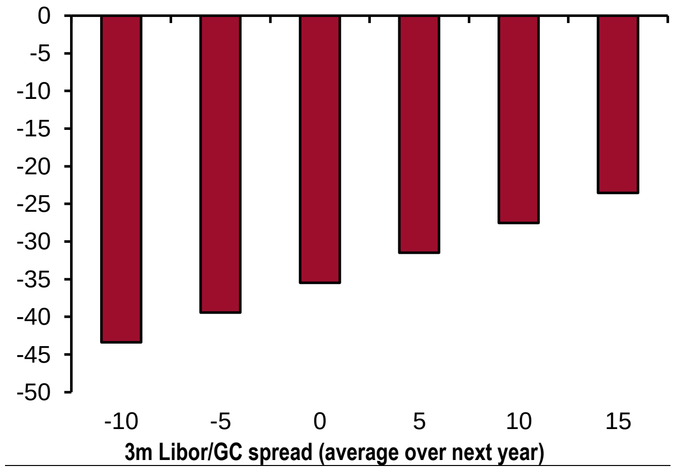
Change in swap spreads required to match risk-adjusted returns on spread wideners prior to Chinese devaluation and actual spread changes; bp



Source: Credit Suisse

Exhibit 11: Even at current spread levels, we believe it makes sense for LDI investors to switch from receiving fixed to being long futures (or TRS)

30y swap spread that would lead an LDI investor to be indifferent* between using swaps and futures (for various Libor/GC spreads); bp



Source: Credit Suisse

Putting it all together, **it seems that we are still at least 15bp-20bp from levels where front and intermediate spreads may be attractive to market players, though if spread volatility subsides, these sectors could see support earlier. In contrast, LDI investors are already incented to switch from receive fixed positions to long futures—if they were to follow through, we should see long-end spread widening. That said, the proximity of year-end may prevent many of these investors from either adding positions or rebalancing; therefore, we could see further tightening pressure in before year-end**.

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