

## Global Money Notes #19

### Libor-OIS: A Morbidity Review

Libor-OIS is widening again, up by close to 20 bps since October. It can widen another 20 bps at most until it gets to 50 bps, at which point crossover investors—intermediate and unconstrained bond funds—should provide a backstop bid.

But there are three caveats to this forecast, all of which have to do with the stock market...

First, a market selloff can weaken demand for CD and CP from seclenders' cash collateral reinvestment accounts, which can pressure Libor-OIS wider.

Second, a stock market selloff can also prompt cash-rich corporate treasurers to sell front-end bank debt from their offshore investment portfolios, which, in turn, could pressure higher the spreads at which the backstop bid is triggered.

Third, given how large the flows generated by the sales of corporate treasurers, a backup in dealers' IG inventories can lead to a deterioration of LCR metrics, which would have to be remedied through CD and CP issuance into year-end—these prints can push Libor-OIS wider, as it they did around March 31, 2018.

If stocks post a massive rally before year-end, then the opposite would happen—risks to our call for Libor-OIS to peak at 50 bps would be to the downside.

Our forecast is derived from a careful analysis of the big Libor-OIS move of 2017-18. Part one of our analysis, provides a "morbidity review" of that move, analyzing all the primary and secondary market drivers that contributed to it.

One lesson from part one of our analysis is that STIR traders and strategists focus too much on markets that are adjacent to the three-month Libor point—such as bills, repo, FX forwards—and the term structure of the Libor curve, to the neglect of stock market dynamics and the dynamics of the IG market.

Part two of our analysis, provides an analysis of who backstops Libor-OIS moves and at what spreads. Here, we find that post-corporate tax reform, intermediate bond funds are the backstop bid for bigger Libor-OIS dislocations.

Because intermediate bond funds typically invest at the 2-3 year segment of the IG credit curve, they would only backstop Libor-OIS dislocations if spreads at the tree-month point get flat relative to spreads at the 2-3 year segment. As such, the slope of the IG curve relative to the three-month Libor point is what ultimately determines how wide Libor-OIS can go during an episode of stress.

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## Part I – Libor-OIS: A Morbidity Review

Former Secretary of the Treasury Tim Geithner once remarked in an [interview](#) that the “*medical profession does some things that economists don’t do that well; for example, they have [...] weekly morbidity and mortality reviews where they go over past mistakes*”.

STIR professionals would benefit from regular morbidity reviews as well...

Views about what drove the Libor-OIS move earlier this year have become dogmatic and letting dogmatism get in the way of pragmatism may come at the cost of future returns. Two views dominate the debate about what drove the Libor-OIS move earlier this year: bill supply and repatriation. While both were prominent drivers, they weren’t the only ones.

In retrospect, we count six distinct drivers of the Libor-OIS move. In chronological order these are: U.S. banks’ G-SIB surcharges, repatriation, and bill supply in [primary markets](#), and the equity market selloff of mid-February, Japanese fiscal year-end rebalancing, and the resulting increase in broker-dealers’ IG credit inventories in [secondary markets](#).

Several of these drivers are “live” again, driving the Libor move that started in October. The more we understand these drivers, the more informed we’ll be about how much wider Libor-OIS can go; what group of investors will provide a backstop bid (if needed); and, what is the minimum that Libor-OIS has to widen before the backstop bid finally arrives...

**Driver I:** U.S. banks’ G-SIB surcharges and “hand-off”.

G-SIB surcharges refer to the extra capital that globally systemically important banks (G-SIBs) have to hold in future periods based on their balance sheet profile today. In order to avoid higher surcharges, U.S. banks started to adjust their balance sheets in mid-November of 2017, which was the initial catalyst to the widening of Libor-OIS. This happened well [before](#) either repatriation or bill supply started to impact the front-end!

The link between Libor-OIS and U.S. banks managing their G-SIB surcharges is complex.

All global bank’s G-SIB surcharge is determined by its G-SIB score; G-SIB scores are determined by the bank’s balance sheet attributes; and balance sheet attributes are determined by the bank’s funding profile and its day-to-day activities as a market maker.

G-SIB surcharges are important because they influence the cost of bank balance sheets and balance sheet costs have a strong influence on a bank’s position as a market maker – more capital means a more expensive balance sheet; a more expensive balance sheet means less competitive pricing; less competitive pricing means a diminished ability to print trades and provide liquidity for clients. In short, G-SIB surcharges impact a bank’s profits.

U.S. banks are particularly sensitive to their G-SIB surcharges as their surcharges are the [highest](#) globally (see [here](#)). Given their relatively high surcharges, when U.S. banks reach G-SIB scores that would push them to an even higher surcharge bucket, managements tend to clamp down on balance sheet usage aggressively, typically in the market making parts of the bank. According to their FR Y-15 filings from the third quarter of 2017, J.P. Morgan, Bank of America and Citibank were only a few points away from falling into the next higher surcharge bucket (see Figure 1), which, in several cases, prompted management to shrink market making activities, from mid-November to year-end of 2017.

The link between Libor-OIS and U.S. banks shrinking market making activities to control their G-SIB scores occurs through what we can refer to as “hand-off” as explained below.

Market making involves both matched-book intermediation and bridging imbalances in order flows through arbitrage – borrowing in one market segment and lending in another.

U.S. banks typically fund arbitrage activities either via retail deposits or advances from the Federal Home Loan Banks (FHLBs). For example, if borrowers in the FX swap market

need more dollars than the amount flowing through matched FX swap books, banks would tap retail deposits or FHLB advances for additional dollars to lend. Ditto [equity futures](#). The key point here is that tapping either of these funding sources has no impact on Libor.

When U.S. banks step away from market making to manage down their G-SIB scores, end-users' dollar needs don't change, and other market makers step in to cater to end-users' dollar needs instead. But these other market makers are foreign banks without access to retail deposits or FHLB advances. Their main access to funding are the CD and CP markets, and tapping these markets does have an impact on Libor fixings.<sup>1</sup>

Thus, "hand-off" refers to U.S. banks stepping away as market makers and foreign banks stepping in as market makers instead of them, and the main link between Libor-OIS and U.S. banks managing their G-SIB surcharges at year-ends is the shift in the funding leg of arbitrage transactions away from retail deposits and advances to CD and CP markets.

Canadian banks are particularly well positioned to temporarily step in as market makers for large U.S. banks for two simple, yet powerful reasons:

- (1) Of the five main Canadian banks only one, the Royal Bank of Canada, is a G-SIB, and its surcharge is the lowest possible and half the size of U.S. banks'.
- (2) Of all global banks, Canadian banks are unique in their regulatory reporting cycle: their year-end is October 31<sup>st</sup>, while year-end is December 31<sup>st</sup> for other banks.

Canadian banks' unique reporting cycle means that when U.S. and other foreign banks are shrinking their balance sheet due to year-end balance sheet reporting constraints, Canadian banks are practically unconstrained to substitute for them as market makers.

In other words, the global financial system does not feel it one bit when it's year-end for the Canadian banking system, but when it's year-end for the global financial system, Canadian banks are "there for the world". That Canadian banks step in as market makers at the right time and without having to worry about what a temporary expansion of their balance sheet means for their G-SIB scores puts them in a strong competitive position around year-ends, and, in a conscious effort to monetize this position, Canadian banks' bid for unsecured U.S. dollar funding is typically quite aggressive around year-end turns.

Canadian banks' bid for unsecured dollar funding was particularly strong last December in the o/n and term fed funds market, and also the three-month CD and CP markets. Clients with access to DTCC data can see that last year-end, Canadian banks stood out in terms of the amount of CD and CP funding they bid for, and the rates that they paid. Most of the U.S. dollars raised by Canadian banks were lent in the FX forwards and equity futures markets, where implied yields at the three-month point traded at spreads as wide as 80 and 100 bps to U.S. dollar Libor, respectively, going into the end of 2017.

Talking to cash lenders in the money market – prime money funds and other cash funds – one thing you learn early on is that if a "pack" of foreign banks starts to pay above Libor, cash lenders will expect all other foreign banks to do the same on the grounds that "the market is where the marginal trade just printed". In our conversations with practically all major bank treasurers globally, we've encountered only one who has been able to print at sub-Libor levels both during prime money fund reform and the recent episode of stress.

The temporary shift in market making to Canadian banks triggered by U.S. banks managing their G-SIB surcharges around year-end added 15 bps to the Libor-OIS spread between mid-November and December 31<sup>st</sup>. The move was expected to be temporary, but it wasn't, and it wasn't because corporate tax reform became law around Christmas.

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<sup>1</sup> Foreign banks can tap repo markets too to conduct arbitrage.

**Driver II:** corporate tax reform and repatriation.

Initially, some STIR strategists dismissed the potential impact that corporate tax reform and repatriation will have on the front-end – including yours truly. That view was wrong. Those who expected an impact on the front-end were right, but for the wrong reasons...

Those who expected a front-end impact assumed that as corporations move their balances from deposits and money funds offshore to government money funds onshore, foreign banks will have to replace dollar funding by tapping funding markets in the U.S. – prime money funds through the CD and CP markets and U.S. banks through FX swaps.

But these financial flows didn't show up in the data, and there is a good reason why: in [Repatriation, the Echo-Taper and the €/ \\$ Basis](#), we provided a detailed overview of the offshore investment portfolios of the most cash-rich corporations, and showed that their holdings are concentrated in medium-term sovereign, bank and other investment-grade (IG) debt, and not in offshore deposits, offshore money funds or short-term debt. Furthermore, our report showed that while the offshore balances of smaller corporations appear sizeable in the aggregate, they are unlikely to be repatriated as they represent a genuine liquidity need offshore, and not excess liquidity that's free to be moved around.

While we were right on the first-order impacts of repatriation, we completely missed its second-order impacts – especially the defensive posture that repatriation would trigger at foreign banks' funding desks, and paradoxically, highly-rated banks' funding desks...

Why would bank funding desks turn defensive due to repatriation?

Foreign bank treasurers knew full well that cash-rich corporate treasurers have been prominent buyers of front-end – that is, 1-3 year – bank debt, and corporate tax reform made it abundantly clear to them that corporate treasurers won't be the marginal buyer of their debt going forward. The questions of who will buy instead and at what spread became top of mind, and many banks expected their funding costs to go up significantly.

Foreign banks expected their funding costs to go up because they understood that corporate treasurers were ratings-driven buyers of bank debt, and ratings-driven buyers typically buy bank bonds at much tighter spreads than unconstrained, yield-driven buyers.

Corporations were ratings-driven buyers of bank debt because they were prolific issuers of their own debt to fund stock buybacks and to pay dividends. To protect their ratings and avoid downgrades, they invested only in top-rated debt – that's why Treasuries and the bonds of highly-rated banks from highly-rated countries dominated their investments.

Thus, in essence, the ratings agencies turned corporate treasurers into "captive" buyers of bank debt, much like the Chinese central bank was once a captive buyer of Treasuries. Banks were fortunate to have cash-rich corporates as relationship buyers of their debt – getting Basel III compliant would have been a lot more expensive without their steady bid.

Corporate tax reform basically meant the end of this multi-year funding honeymoon, and bank treasurers knew that there is only one way for funding costs to go from here, which is up. Hence their defensive funding posture coming into the first months of 2018.

Under Basel III, the 1-3 year segment of the unsecured funding market is particularly valuable for banks. Banks fund their LCR compliance with one-year debt, and NSFR with 2-3 year debt. Given that the funding of their regulatory metrics are at stake, many foreign bank treasurers chose not to take chances and started to pre-fund their metrics.

But with corporate treasurers gone, the 1-3 year segment of the funding market was shut, and banks had to barbell their issuance, mixing five-year funding with three-month funding. Figure 2 shows the total volume of U.S. dollar funding raised by foreign banks by term during the first quarter of 2018 and Figure 3 shows also through the first quarter of 2018

prime money funds' assets under management (AuM). Combined, the two charts show how increased CD and CP supply at the three-month point during the first quarter hit the wall of inelastic demand as prime money funds' AuM was flat during the entire period.

Increased issuance at the three-month point driven by the defensive pre-funding of several foreign banks exacerbated the dynamics that started with U.S. banks' G-SIB surcharges. Canadian issuance into year-end set the tone in unsecured markets, and foreign banks' defensive posture coming into the new year maintained the pressure through January, preventing Libor-OIS from mean-reverting, as many had expected...

**Driver III:** the resolution of the debt ceiling and Treasury bill supply.

The \$400 billion of bills issued following the resolution of the debt ceiling in February pushed three-month bill yields from 10 bps below to 10 bps above OIS by mid-March – bills went from trading at a negative scarcity premium to a positive abundance discount, and this 20 bps swing pushed the floor under all private rates higher by a similar amount.

In addition, the supply of bills also took away the scarcity premium of short-end assets and that meant that CD and CP issued by banks started to trade at wider spreads to bills – i.e., while a shortage of bills crowded in CD and CP issuance, keeping spreads tight, the surge in bill supply and the resulting safe asset glut started to crowd out CDs and CP.

Figure 4 shows Libor-OIS expressed as the sum of the bills-OIS and Libor-bills spreads. It shows well how the initial Libor-OIS move from mid-November to December 31<sup>st</sup>, 2017 was driven mostly by Libor widening to bills as foreign banks ramped up CD and CP issuance amidst inelastic demand to take over from U.S. G-SIBs as market makers. January was a lull. February and March were the months of the big moves when bill supply pushed the floor under everything by about 20 bps higher – the bills-OIS move – and crowded out banks trying to pre-fund, which pushed the Libor-bills spread 35 bps wider.

But there is an important caveat to the Libor-bills angle, which is that it matters greatly whether large chunks of bill supply coincide with banks raising large chunks of funding.

If yes, crowding out can drive Libor-bills spreads wider.

If not, bill supply doesn't matter too much for Libor-bills.

We've seen this caveat in action during July and August of this year, when bill supply didn't do much to Libor-bill spreads as banks had already pre-funded and didn't issue.

Context thus matters – the Libor-OIS impact of Treasury competing with banks for funding is not the same as Treasury not competing with banks for funding. That bill supply during the first quarter coincided with foreign banks defensive funding posture due to repatriation was important, and it made the market impact of bill supply worse than it otherwise would have been. In addition, the Treasury competing with banks for funding in primary markets can also be complicated by dynamics in secondary markets. We discuss these drivers next.

**Driver IV:** the equity selloff of mid-February and late March, buybacks and seclenders.

The 10% correction in equity markets of February prompted several corporations to raise cash for buybacks by selling bank debt from their portfolios. We've all heard anecdotes about cash-rich corporations putting out BWICs for bank debt during February, and the quarterly financials of these cash-rich names corroborate these anecdotes (see Figure 5). According to the cash-flow statements of the top ten most cash-rich corporations, the equity market selloff prompted the sale of \$40 billion in IG debt – most of it bank debt – and record volumes of stock buybacks during the first quarters of 2018 (see Figure 6).

Corporate treasurers' outright selling of bank debt in February did not make life easier for foreign bank treasurers trying to pre-fund. If you're a prime money fund or other cash fund

and see cash-rich corporate treasurers selling one-year bank debt in the secondary market, you won't buy three-month new issue paper – CDs and CP – at lower-yields from banks. Increased secondary market offering of bank debt was yet another pressure point on three-month Libor-OIS – banks weren't competing only with bills but also secondary flows.

In particular, just as banks were barbelling their issuance around the 1-3 year segment by mixing three-month with five-year funding, prime money funds and other cash funds were barbelling their investments by buying some one-year paper that was on offer in secondary markets mixed with o/n investments to keep WAM and WAL metrics in check. The three-month funding point thus became "orphaned" – banks wanted to issue there but cash lenders did not want to buy there, and so three-month spreads had to catch-up with one-year spreads for three-month paper to be attractive to investors again. Importantly, keep in mind that demand is weak at this time as prime funds' AuMs are flat.

To make things worse, AuMs at some important, yet under-appreciated funding providers – securities lenders' cash collateral reinvestment accounts (henceforth seclenders) – started to stall, also due to the stock market selloff (see Figure 7). When stocks fall, seclenders typically post cash collateral to short sellers that are increasingly in the money on their positions, and as cash is moving away, they turn defensive with reinvestments and invest cash at shortening maturities, unwilling to lend beyond a month – yet another factor why there was no backstop to the three-month point from money market investors.

Some market participants still hold the view that repatriation could not have been a driver of Libor-OIS as the amount of bank debt sold by corporate treasurers has been small (see Figure 6), and whatever's been sold was term debt and not short-term CD and CP.

This line of thinking misses the point.

Corporate treasurers don't have to sell bank debt for repatriation to have an impact – it's sufficient if they stop buying, and banks start to defensively pre-fund. And, if they sell, the selling need not be big to move spreads around in a market that's thin on the margin – and with prime money funds and seclenders' AuM flat to down during the first quarter, the market for CDs, CP and one-year bank debt was quite thin on the margin indeed, and so primary and secondary market flows didn't have to be big to move Libor around a lot.

**Driver V:** Japanese fiscal year-end re-balancing going into the March 31 calendar turn.

Japanese banks and life insurers have been important buyers of IG credit in recent years, mostly on an FX-hedged basis. The Japanese bid has been strongest in the 5-7 year segment of the IG credit curve and spanned not only bank names but also industrials.

Japanese accounts re-balance their credit portfolios as Japanese year-end approaches, which involves selling bonds that have rolled down the curve and became shorter than 5-years, and buying new 5-7 year bonds. In the past, cash-rich corporate treasurers were the buyers of these bonds, but due to repatriation, they were absent this time around.

Thus, corporate tax reform ended not only a multi-year funding honeymoon between corporate treasurers and foreign banks, but also the "partnership" that existed between corporate treasurers and Japanese credit investors whereby corporate treasurers were reliable partners for Japanese accounts to re-balance their portfolios around year-ends. Like the buyback-related selling of front-end, 1-3 year bank debt by corporate treasurers, re-balancing-related selling of 3-5 year IG debt also increased secondary market supply.

Now we are dealing with something bigger than "just" bill supply – the market dynamics include three-month bills competing with three-month CD and CP in primary markets; three-month CD and CP competing with some one-year bank debt in secondary markets; and one-year bank debt competing with 3-5 year IG debt also in secondary markets.



Prime money funds would decide between three-month CD and CP and one-year debt, seclenders would normally consider debt out to two years, but not this time around, and less constrained investors such as enhanced cash funds and intermediate bond funds would consider IG debt out to five years. Where three-month Libor would ultimately peak came down to where yields in the 1-5 year segment would stabilize (more on this below).

**Driver VI:** an increase in dealer's IG credit inventory and last-minute fixes to LCRs.

Rates trading is purely price driven whereas credit trading is mostly relationship driven, partly because the dealers that help bring IG and other bonds to the market are bound by a gentleman's agreement to provide secondary market liquidity for what they underwrote.

Whether the selling pressure is coming from cash-rich corporate treasurers turning from net buyers to net sellers of bank debt due to tax reform, or from Japanese accounts rebalancing portfolios around Japanese year-end (that is the March 31<sup>st</sup> calendar turn), dealers that underwrote the bonds being sold are now on the hook to provide liquidity – that is, to buy them for their inventory temporarily until they find a buyer to offload to later.

When a dealer steps in to buy IG credit that corporate treasurers and Japanese accounts are selling, the dealer pays with reserves which hurts its LCR metrics. That's because the IG bonds bought aren't HQLA, but the reserves that paid for them were. Given that the drivers of expanding IG inventories – the equity selloff of mid-February and late March, and the Japanese year-end portfolio rebalancing in the run-up to the March 31<sup>st</sup> turn – both happened in the run-up to a routine quarter-end when Basel III metrics are binding, banks that stepped in to support their IG franchise at the expense of their LCR metrics had to top up their HQLA and did so by tapping three-month unsecured funding markets – that is, the CDs and CP markets – at whatever cost. Three-month because for reserves to qualify as HQLA they must be funded longer than 30 days; not longer than three-months because inventories were expected to clear relatively quickly after the quarter-end turn; and unsecured because HQLA cannot be encumbered and so must be funded unsecured.

It's important to appreciate that, the way IG markets traded came to an inflexion point during the first quarter of 2018, which had a profound implication for dealers' inventories and Basel III metrics. In specific, for as long as corporate treasurers were buyers of credit and partners in helping Japanese accounts re-balance around Japanese year-ends, dealers bought and sold credit quickly – inventory turnover was fast – and their parents' reserve accounts at the Fed depleted and replenished quickly so that by the March 31<sup>st</sup> reporting date, liquidity metrics were back on target. But when corporate treasurers went from buyers to sellers and stopped being partners to Japanese year-end rebalancing, dealers' inventory turnover slowed down dramatically. Dealers got “double-stuck” with IG inventory, having to absorb the flow from a group of accounts – corporate treasurers – that never sold before, and having to absorb the Japanese year-end rebalancing flows that were routinely absorbed by cash-rich corporate treasurers before (see Figure 8).

We are not sure anyone foresaw this inflexion point in the dynamics of credit markets and so when some dealers' IG franchises were protected at the expense of LCR metrics, no one really foresaw the aggressive bid for three-month funding around the March 31<sup>st</sup> turn to remedy the hit to LCR metrics. Those bids for unsecured three-month funding in primary markets drove some rather aggressive moves in Libor in an environment where few expected that Libor-OIS could possibly get any wider. Importantly, these bids in primary markets were driven by secondary market flows, bringing together the seemingly disparate themes of pre-funding, bills, buybacks and Japanese year-end re-balancing.

These last-minute CD and CP prints to fix LCRs were the icing on the Libor-OIS cake, and clients with access to DTCC data can see who printed how much and at what rates just days before the March 31<sup>st</sup> calendar turn. On April 1<sup>st</sup>, Libor-OIS stopped widening.

## Part II – Libor-OIS: Backstop

Out of close to 400 client meetings this year, only two clients have asked the following questions:

- (1) How do you know the “fair value” of Libor-OIS when its widening?
- (2) How wide can Libor-OIS go and what is the ultimate backstop?

The first is not the right way to think about Libor-OIS – Libor-OIS widening has nothing to do with fair value and everything to do with technicals. The second one is a fundamental question that the STIR market should prioritize, but only one of 400 clients has asked.

To get a handle on Libor-OIS, most STIR traders look at supply and demand dynamics at the three-month Libor point and everything that happens around it in adjacent markets like bills, repo or FX forwards and color these views with the term structure of the Libor curve.

But then consider that according to our analysis, Libor-OIS earlier this year was driven by:

- (1) increased primary CD/CP supply due to “hand-off” amidst inelastic demand;
- (2) increased primary CD/CP supply due to pre-funding amidst inelastic demand;
- (3) increased primary CD/CP supply crowded out by increased bill supply;
- (4) increased primary CD/CP supply crowded out by secondary 1-3 year IG supply;
- (5) increased primary CD/CP supply crowded out by secondary 3-5 year IG supply;
- (6) increased primary CD/CP supply due to secondary IG supply (inventories/LCR).

...the last three of which have absolutely nothing to do with cross-market dynamics at the three-month point, but secondary market dynamics farther out the bank funding curve.

Importantly, in an environment where the “backstop” buyer of CD/CP is a crossover buyer that can buy anything between three-months and five years, where bank debt trades out to one, three or five-years has a huge implication for how far three-month Libor can go.

Before Basel III, the backstop buyers during CD/CP dislocations were banks and dealers. Under Basel III, they are no longer backstops as CD/CP do not qualify as HQLA assets.

During money fund reform, the backstop buyers of dislocation were corporate treasurers, but tax reform and repatriation made them a central part of the problem this time around – not only were they absent as buyers into the CD/CP dislocation, they made it worse by selling some of their bank debt holdings as they needed to raise liquidity for buybacks.

Similarly, during money fund reform the stock market was performing well and seclenders had cash collateral coming in which helped backstop the CD/CP dislocation back then. But with stocks down this time around, seclenders lost cash and couldn't serve as a backstop.

Intermediate bonds funds that typically live on the 2-5 year segment of the IG curve became the backstop this time around and these investors waited for three-month Libor to flatten relative to their usual habitat before they came in to backstop the CD/CP market.

They backstopped the three-year point when it became flat relative to the five-year point. They backstopped the one-year point when it became flat relative to the three-year point. They backstopped the three-month point when it got flat relative to the one-year point.

Figures 9, 10 and 11 show the flattening of the entire the bank funding curve between November 1<sup>st</sup>, 2017 and March 31<sup>st</sup> of 2018 – which was the end of the Libor-OIS move.

Calibrating how much Libor-OIS can widen during specific episodes of stress ultimately comes down to the typical habitat of the crossover investor that's “next in line” to backstop the Libor-OIS move – i.e., where relative to the three-month Libor point this investor typically invests and the steepness of the IG curve relative to the three-month Libor point. If the IG curve is steep, Libor moves a lot. If it's flat, Libor moves a lot less...



## Conclusions – Libor-OIS: Into Year-End and Beyond

Libor-OIS is on the move again as we approach the year-end turn. How much will it widen and will it tighten as soon as the year-end turn is behind us? Or will it keep on widening? Our morbidity review of the Libor-OIS move of 2017-18 year suggests the following.

First, U.S. banks G-SIB surcharges and “hand-off” are live drivers again.

History shows that G-SIB surcharges and “hand-off” have been drivers of Libor-OIS at every year-end since 2015. They drove a 10 bps move heading into year-end 2015, and they probably drove a similar move heading into year-end 2016, but that was masked by prime money fund reform which drove a massive dislocation beforehand. Then, they drove a 15 bps move in Libor-OIS heading into year-end 2017 – bigger than the 2015 move as some U.S. G-SIBs were caught off-guard about how close they got to falling into a higher G-SIB bucket and so they clamped down on their market-making activities more aggressively, which drove bigger “hand-off” flows. This year, the Libor-OIS move started about a month sooner – in late October, as opposed to late November like last year – as all U.S. G-SIBs are more careful about their G-SIB scores heading into the year-end turn.

Second, while defensive pre-funding due to repatriation isn't a live driver this time around, bill supply is, and bills will compete with “hand-off” related funding going into year-end (this will show up mostly in three-month bills trading at a growing abundance discount).

Third, unlike during the second and third quarters of this year, when prime money funds' AuMs were growing, prime money funds' AuMs have been flat since late September and so the bid for CD and CP is thin on the margin once again – whatever issuance will have to get done between now and year-end will depend on crossover buyers to get printed...

Taken together, G-SIB surcharges, bill supply and flat prime fund AuMs between now and year-end are likely to drive three-month Libor-OIS 40 bps at most, i.e. Libor-OIS can widen out to about 50 bps by year-end at most, in our view. That's 50 bps and not a bp more because if three-month Libor-OIS gets to 50, then funding spreads will get 50 bps flat from three-months out to two-years, at which point bond funds will step in as backstop buyers, selling two-year debt and buying three-month paper (see Figure 12).

Now the caveats...

...both of which have to do with secondary markets.

The recent stock market weakness has started to impact Libor-OIS through two channels: through outflows from securities lenders' cash collateral reinvestment accounts, and through corporate treasurers selling their CD, CP and front-end bank debt holdings.

First, as stocks are falling, seclenders have to post cash collateral back to short sellers who are increasingly in the money, and seclenders fund these flows by drawing on their balances in institutional-class prime money funds – this is the genesis of the \$20 billion in outflows that we've seen from institutional-class prime money funds since September. If stocks keep falling into year-end, outflows can intensify from here and so pressures on CD/CP rates and Libor-OIS can increase. If the market rallies, the opposite can happen.

Second, a falling stock market can trigger another round of sales of front-end bank debt by corporate treasurers, which can complicate banks' year-end funding plans, especially if sales push spreads at the 1-3 year segment of the bank funding curve measurably higher – to say 70 bps, from the current 50 bps – so that Libor-OIS has to widen 20 bps more before the curve gets flat and the backstop from crossover buyers arrives (see Figure 13).

Third, depending on the size of secondary market flows on the back of the factors above, dealer inventories of IG debt can back up again hurting dealers' LCR metrics, which can once again trigger last-minute prints in CD and CP markets to fix LCRs just like in March.

We are no forecasters of the stock market, but our message for STIR traders is that the performance of the stock market is a wildcard that can impact how Libor-OIS trades.

Since Basel III went live on January 1<sup>st</sup>, 2015 the stock market was going only one way: which was up. But the stock market came to an inflexion point this year, recording a correction in mid-February and March and then again in late-September and October.<sup>2</sup>

STIR traders did not have to worry much about inflexion points in the stock market and what these would mean for the AuM of seclenders' cash collateral reinvestments accounts.

But now they do.

Furthermore, for the better part of the past decade, corporate treasurers were funding their buybacks with debt issuance. But corporate tax reform changed that – treasurers now fund buybacks through the active liquidation of their offshore investment portfolios.

Both seclenders' cash collateral flows and corporate treasurers' portfolio decisions now have an impact on three-month Libor-OIS, and both are driven by how stocks perform.

If stocks are down, seclenders pull cash from prime funds and shorten their duration which hurts demand for CD and CP in primary markets, and corporate treasurers sell front-end debt which also hurts demand for CD and CP through secondary markets...

... a double whammy.

If stocks are up, it's the exact opposite.

Our discussion of how stocks can impact Libor-OIS is relevant on two time horizons: between now and December 31<sup>st</sup>, 2018, and between January 1<sup>st</sup> and March 31<sup>st</sup>, 2019.

First, our forecast for Libor-OIS to widen out to 50 bps can be off if there is a large equity market correction or rally between now and year-end – for whatever macro reason.

Second, what Libor-OIS does after the December 31<sup>st</sup> turn will also depend on stocks. Japanese year-end rebalancing flows typically start around mid-February and the impact that that will have on three-month Libor-OIS are clear and obvious – wider, not tighter.

But whether widening starts before mid-February – and, correspondingly, whether the current episode of widening will extend into next year – is up to how stocks do from here.

Stock market dynamics are now relevant for STIR markets – they were not relevant before.

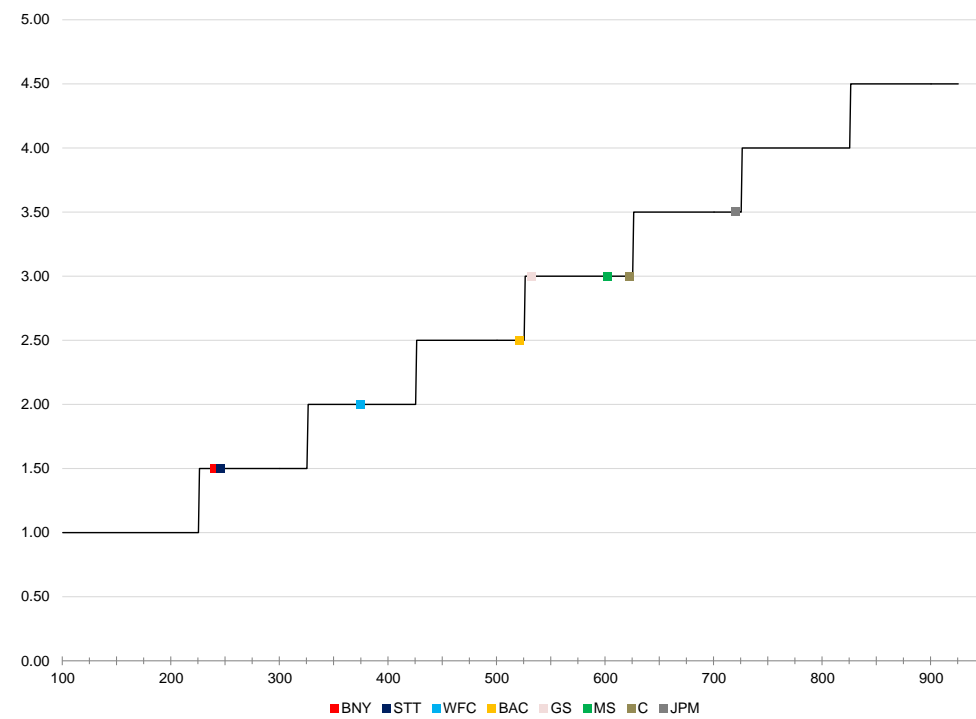
Stock market dynamics constitute a change in the rules of the game – beware of that.

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<sup>2</sup> Early 2016 has seen a stock market correction as well, but back then prime money funds were still a deep source of liquidity for the CD and CP markets and temporary pullbacks by seclenders had much less of an impact on Libor.

**Figure 1: Borderline**

U.S. G-SIB's scores (horizontal axis, unitless) and surcharge buckets (vertical axis, %) as of 17Q3



Source: FR Y-15, Credit Suisse

## Figure 2: Foreign Bank Issuance

\$ billion

### ALL CURRENCIES BY COUNTRY OF RISK

Issue Date	Total	CA	JP	DE	FR	SE	AU	GB	NL	HK	NO	Others
2018 Quarter 1	424,754,086,925	58,958,799,971	41,698,356,054	35,470,310,520	49,364,891,488	30,623,581,400	41,560,119,126	52,776,738,690	24,696,321,224	7,509,833,200	11,727,126,450	70,368,008,802
2017 Quarter 4	317,818,620,476	48,646,742,287	45,127,153,579	23,103,437,403	27,084,165,616	21,175,362,795	22,319,697,593	28,239,591,910	9,153,187,838	14,696,788,385	9,584,709,393	68,687,783,677
2017 Quarter 3	301,248,994,903	65,208,210,550	54,848,204,170	20,674,360,990	14,350,841,874	16,303,938,700	26,642,571,565	21,331,294,600	11,476,197,890	7,090,855,180	4,488,034,284	58,834,485,100
2017 Quarter 2	295,803,121,372	47,708,176,226	35,415,598,811	29,363,271,796	31,542,143,653	25,708,151,550	17,447,469,760	29,197,839,320	10,287,148,711	6,687,004,350	4,059,012,025	58,387,305,170
2017 Quarter 1	382,021,668,690	69,489,830,320	45,418,224,567	38,710,549,972	35,784,191,917	24,168,896,900	33,968,623,847	37,173,143,705	26,818,482,000	4,620,957,493	11,062,053,090	54,806,714,879

### ALL CURRENCIES BY CURRENCY OF ISSUANCE

Issue Date	Total	USD	EUR	NOK	GBP	AUD	JPY	HKD	SEK	CAD	CHF	Others
2018 Quarter 1	424,754,086,925	198,124,340,000	155,914,748,076	3,136,720,000	30,736,335,700	12,179,328,260	6,415,004,140	2,727,366,766	2,010,729,500	9,007,672,875	2,166,524,250	2,335,317,358
2017 Quarter 4	317,818,620,476	162,201,621,000	95,443,353,634	2,775,554,525	14,135,501,550	10,651,454,700	10,282,524,672	4,247,584,333	6,167,091,950	8,030,782,755	2,696,064,750	1,187,086,607
2017 Quarter 3	301,248,994,903	161,305,533,000	81,886,993,642	3,469,017,484	13,332,906,640	13,885,925,240	11,204,079,687	3,186,502,654	187,218,500	8,885,519,350	1,036,942,540	2,868,356,166
2017 Quarter 2	295,803,121,372	146,827,518,000	95,510,759,574	8,839,603,075	12,603,130,500	4,527,863,934	9,386,031,424	2,624,431,940	1,915,590,450	8,813,510,266	1,762,767,000	2,991,915,209
2017 Quarter 1	382,021,668,690	197,775,100,000	123,514,250,092	3,078,380,296	14,736,695,140	13,221,587,554	12,680,016,787	1,717,067,869	3,505,730,400	7,390,810,220	1,664,977,980	2,737,052,353

### ALL CURRENCIES BY PAYMENT RANK

Issue Date	Total	Sr Unsecured	Secured	Subordinated Unsecured	Jr Subordinated Unsecured	1st Lien Secured
2018 Quarter 1	424,754,086,925	316,504,879,620	77,314,106,370	19,502,954,935	11,432,146,000	
2017 Quarter 4	317,818,620,476	238,016,223,808	55,153,255,648	9,848,267,880	14,435,715,140	365,158,000
2017 Quarter 3	301,248,994,903	236,699,312,864	37,342,058,400	14,361,149,939	12,275,488,700	570,985,000
2017 Quarter 2	295,803,121,372	224,824,694,670	41,908,486,490	15,651,858,750	13,268,091,400	149,990,063
2017 Quarter 1	382,021,668,690	293,485,430,513	61,992,697,050	18,474,464,627	7,853,404,500	215,672,000

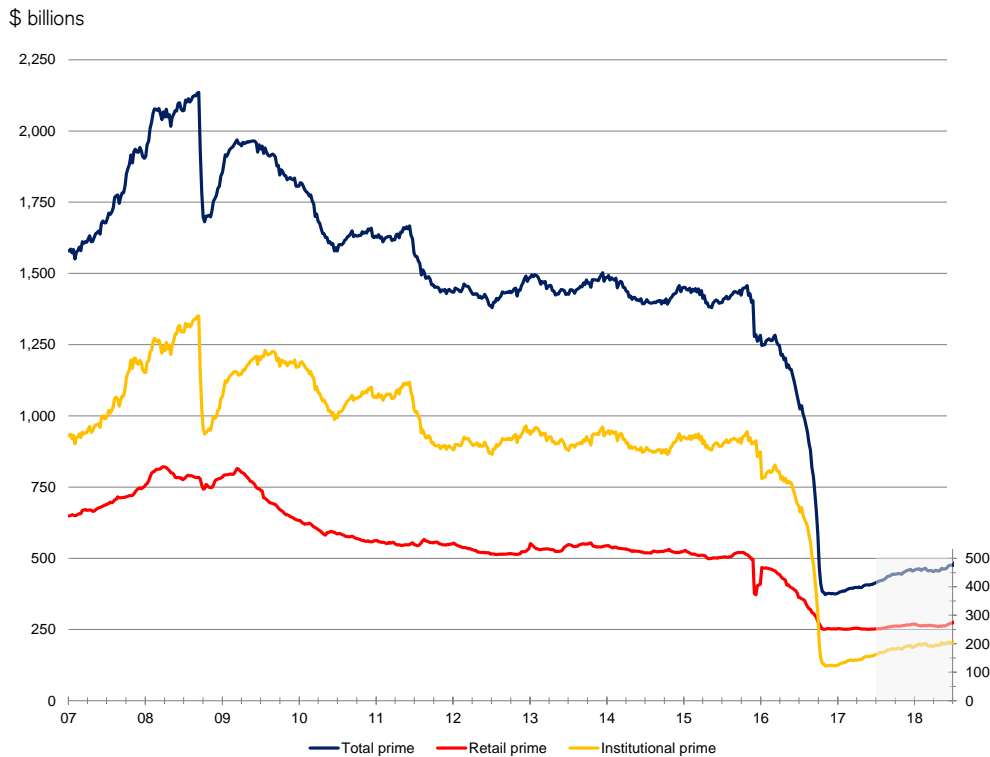
### ALL CURRENCIES BY ORIGINAL MATURITY (YEARS)

Issue Date	Total	0 TO 0.33	0.33 TO 0.67	0.67 TO 1.33	1.33 TO 2.33	2.33 TO 3.33	3.33 TO 5.33	5.33 TO 7.33	7.33 TO 10.33	10.33 TO 15.33	Others
2018 Quarter 1	424,754,086,925	7,532,942,372	82,631,344,600	51,486,350,435	20,704,675,580	34,841,174,862	80,752,205,881	43,583,150,287	58,969,387,887	20,029,669,190	24,223,185,830
2017 Quarter 4	317,818,620,476	11,786,362,727	65,849,422,692	39,822,729,535	13,548,093,200	26,567,340,532	52,296,047,833	41,900,629,576	34,275,367,437	14,049,919,686	17,722,707,258
2017 Quarter 3	301,248,994,903	4,099,185,890	67,262,892,470	53,788,814,540	20,054,009,950	26,561,460,596	54,067,169,344	18,632,850,574	24,426,605,439	11,677,984,900	20,678,021,200
2017 Quarter 2	295,803,121,372	5,040,405,956	62,291,128,570	34,520,085,805	18,344,318,469	25,053,983,398	51,486,384,880	33,824,984,062	29,751,020,653	14,068,751,930	21,422,057,650
2017 Quarter 1	382,021,668,690	5,416,062,810	67,218,301,060	43,201,282,226	27,232,230,774	28,607,618,173	95,830,806,515	32,773,934,698	43,388,466,529	18,410,282,550	19,942,683,355

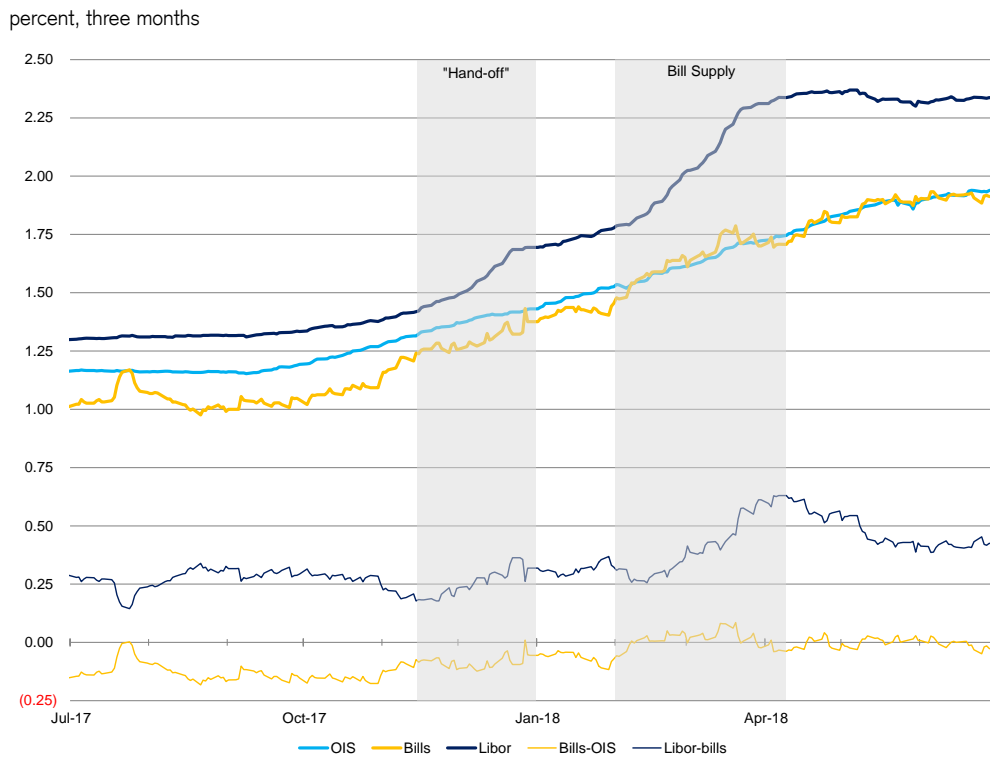
### USD ONLY BY ORIGINAL MATURITY (YEARS)

Issue Date	Total	0 TO 0.33	0.33 TO 0.67	0.67 TO 1.33	1.33 TO 2.33	2.33 TO 3.33	3.33 TO 5.33	5.33 TO 7.33	7.33 TO 10.33	10.33 TO 15.33	Others
2018 Quarter 1	198,124,340,000	6,472,600,000	81,788,170,000	33,416,800,000	5,553,870,000	16,857,900,000	15,450,000,000	8,085,000,000	9,650,000,000	4,635,000,000	16,215,000,000
2017 Quarter 4	162,201,621,000	7,595,600,000	62,139,820,000	31,338,333,000	9,075,800,000	15,363,868,000	7,638,000,000	8,570,000,000	5,407,200,000	8,000,000,000	7,073,000,000
2017 Quarter 3	161,305,533,000	2,440,800,000	64,510,850,000	40,282,541,000	12,005,429,000	11,444,113,000	17,855,000,000		6,900,000,000	419,800,000	5,447,000,000

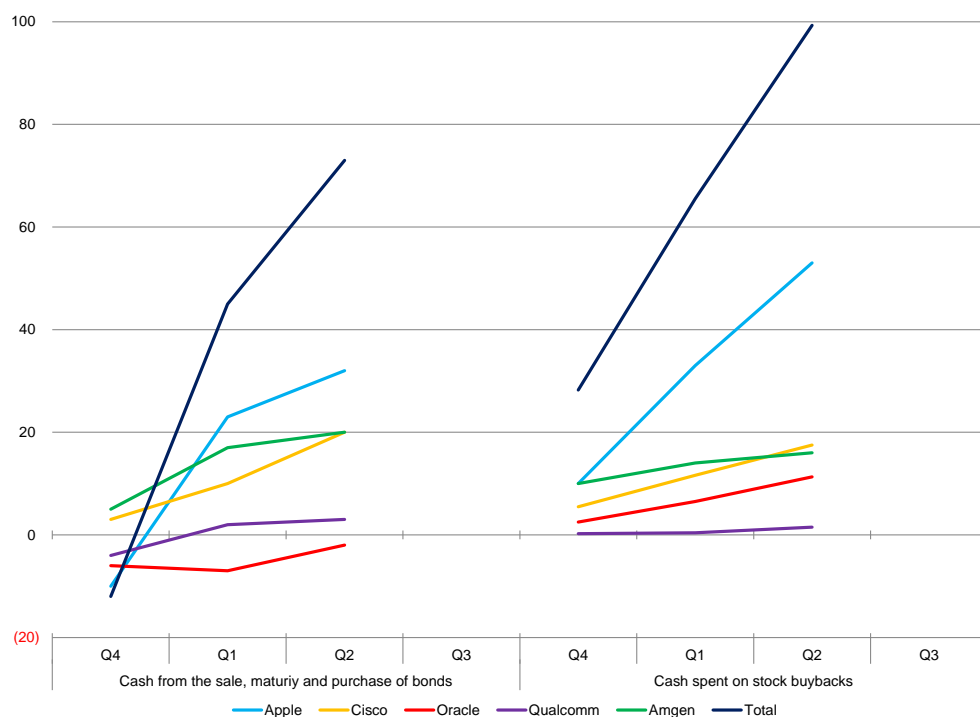
Source: Credit Suisse

**Figure 3: No Inflows Into Prime Funds During the First Half of 2018**

Source: ICI, Credit Suisse

**Figure 4: Bills Crowd Out Unsecured Bank Funding**

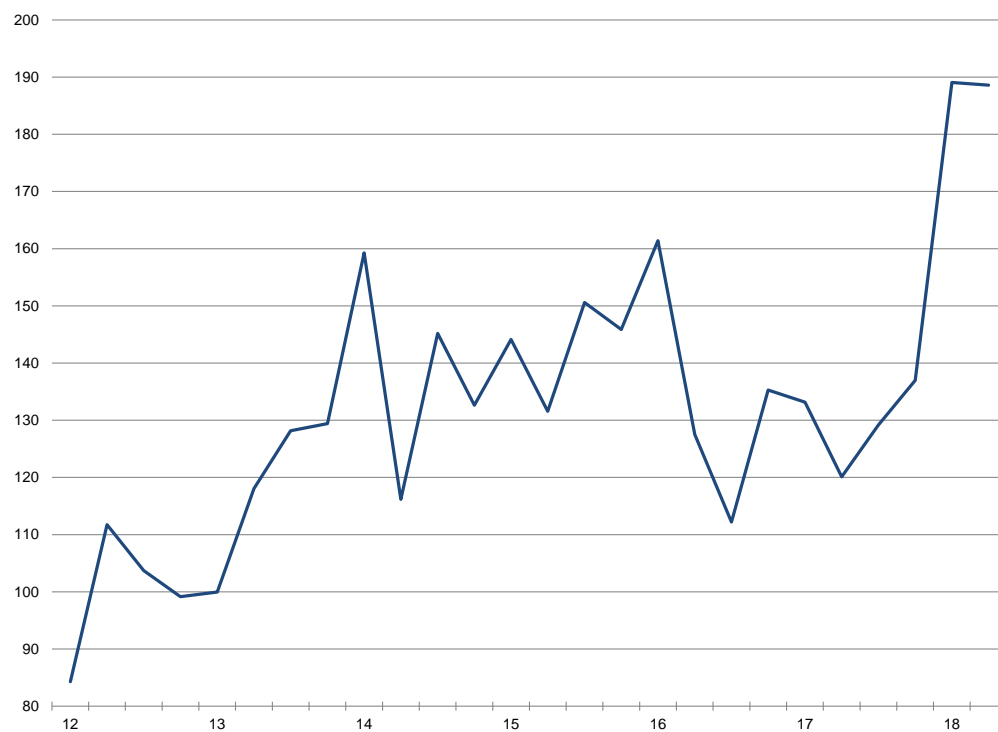
Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

**Figure 5: Cash Raised from Investing Activities and Buybacks**\$ billion, nine months ending June 30<sup>th</sup>, 2018

Source: Company reports, Credit Suisse

**Figure 6: Buybacks Are at a Record**

\$ billion, S&amp;P500 corporations

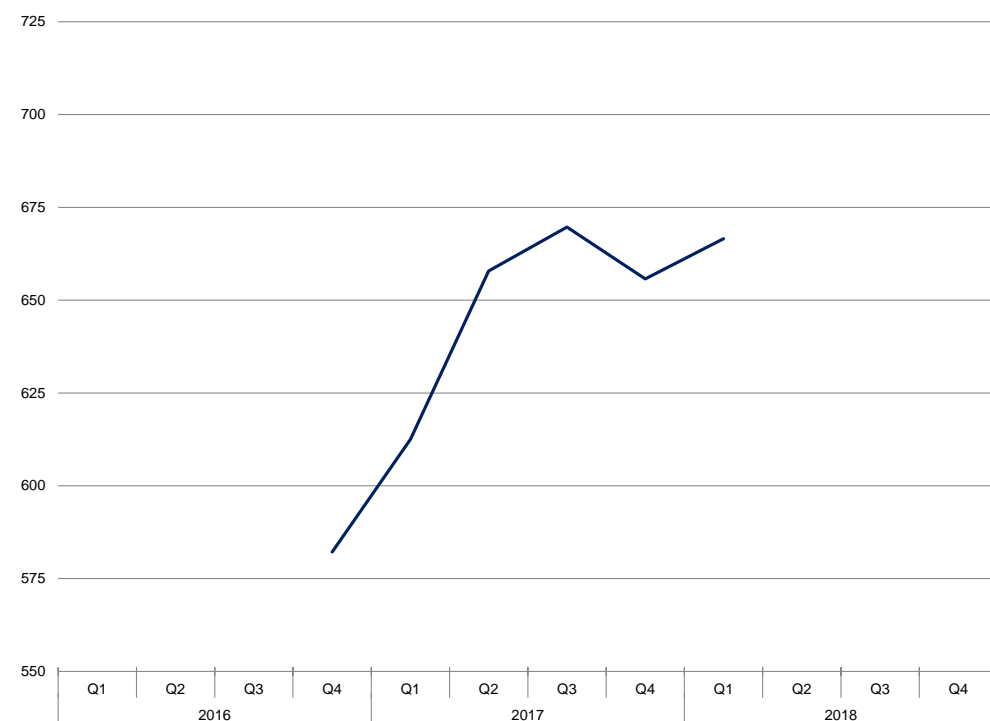


Source: Credit Suisse



**Figure 7: Secenders' Cash Collateral Reinvestment Volumes Stall**

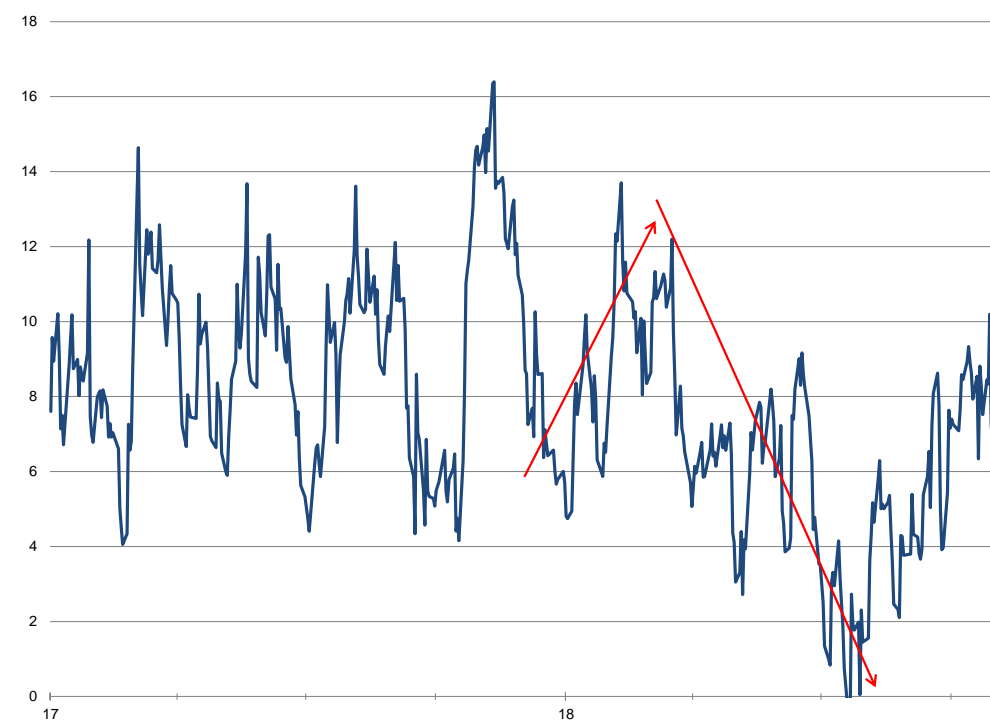
\$ billion



Source: RMA, Credit Suisse

**Figure 8: Dealers' IG Inventories Increase**

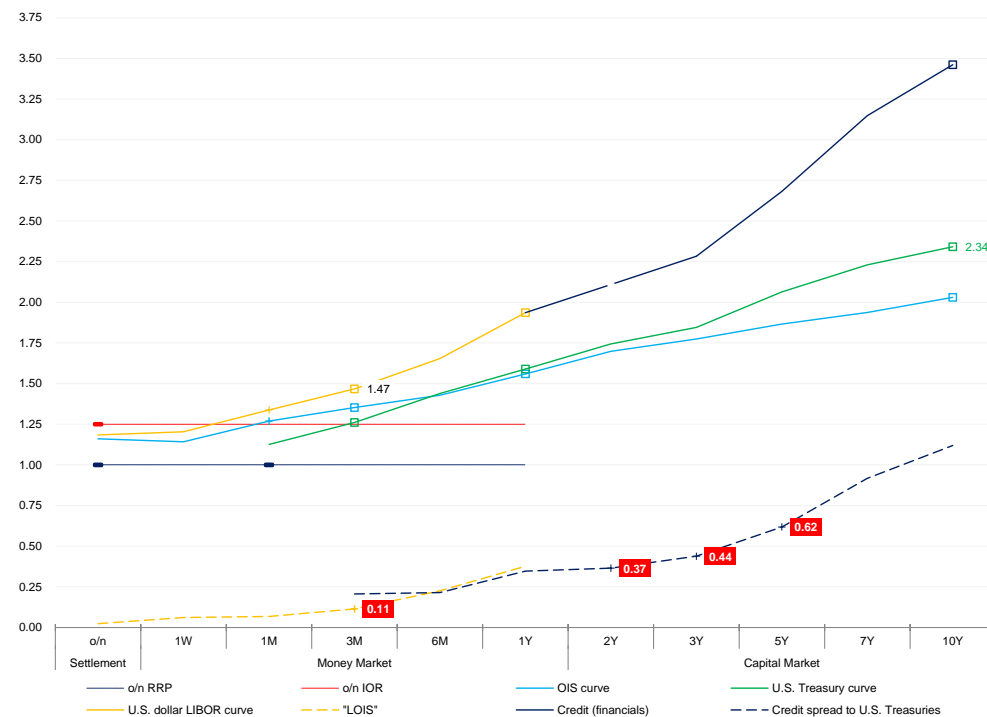
\$ billion, dealer inventories of IG debt



Source: Credit Suisse

### Figure 9: The Calm Before the Storm

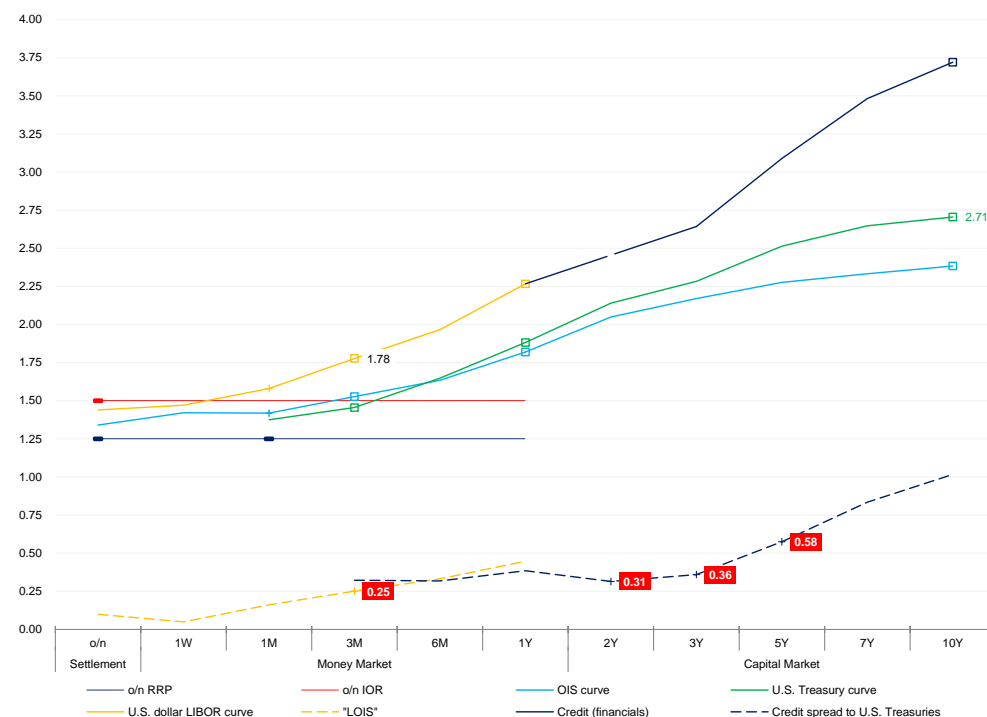
percent, as of late November, 2017, just before the Libor-OIS move started



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

### Figure 10: The Damage of “Hand-Off” and Defensive Pre-Funding

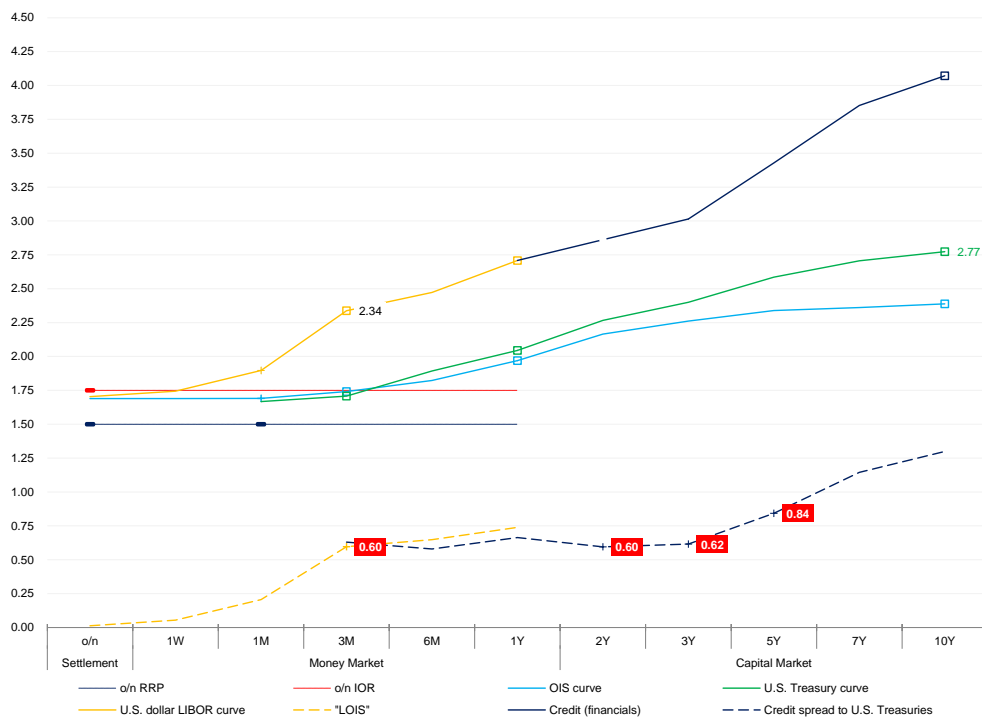
percent, as of January 31<sup>st</sup>, 2018, just before bill supply and secondary flows of IG debt start to hit Libor-OIS



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

### Figure 11: Spreads Flatten, Libor-OIS Stops Widening

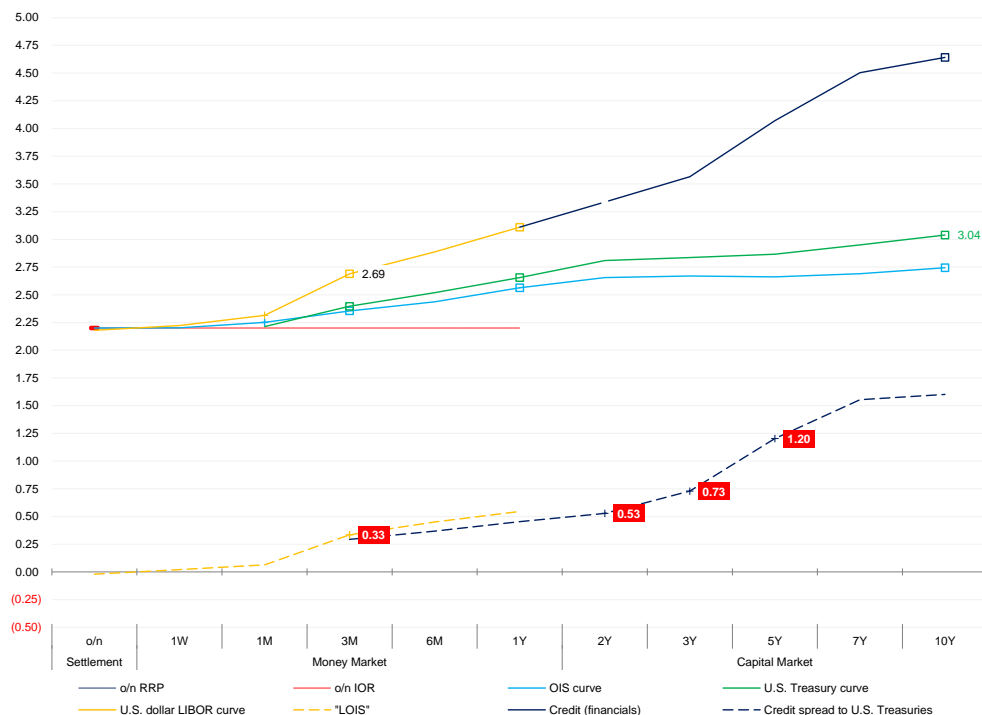
percent, as of April 6<sup>th</sup>, 2018, the day three-month Libor-OIS peaked



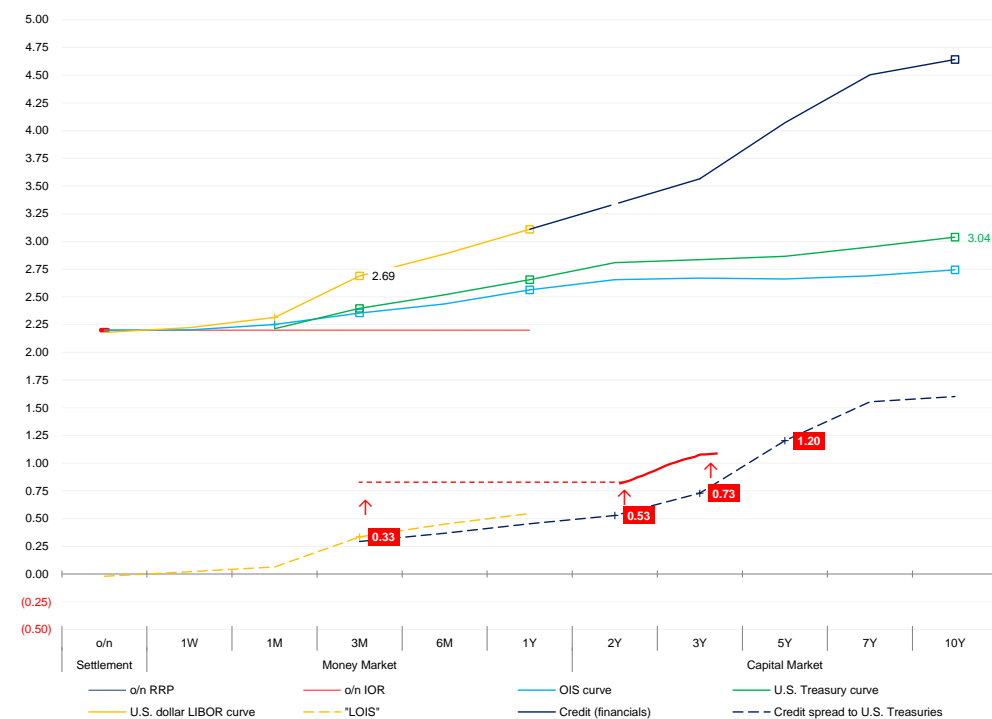
Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

### Figure 12: Libor-OIS Is Widening Again

percent, as of November 23<sup>rd</sup>, 2018



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

**Figure 13: Risks to the Backstop Bid**percent, as of November 23<sup>rd</sup>, 2018

Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

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